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GEOGRAPHICAL BOUNDARIES—II.

BY

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When the political boundary has evolved by a system of contraction out of the wide waste zone to the nicely determined line, that line, nevertheless, is always encased, as it were, in a zone of contact wherein are mingled the elements of either side. This zone includes the peripheries of the two contiguous racial or national bodies, and in it each is modified and assimilated to the other. On its edges it is strongly marked by the characteristics of the adjacent sides, but its medial band shows a mingling of the two in ever-varying proportions; it changes from day to day and shifts backward and forward, according as one side or the other exercises in it more potent economic, religious, racial, or political influences.

Its peripheral character comes out strongly in the mingling of contiguous ethnic elements found in every frontier district. Here is that zone of transitional form which we have seen prevails so widely in nature. The northern border-land of the United States is in no small degree Canadian, and the southern is strongly Mexican. In the Rio Grande counties of Texas, Mexicans constituted in 1890 from 27 to 55 per cent. of the total population, and they were distributed in considerable numbers also in the second tier of counties. A broad band of French and English Canadians overlaps the northern hem of United States territory from Maine to North Dakota.\* In the New York and New England counties bordering on the old French province of Quebec, they constitute from 11 to 22 per cent. of the total population, except in two or three western counties of Maine which have evidently been mere passways for a tide of

\* Eleventh Census of the United States, Population, Part 1., map No. 10 and p. CXLIII.

*habitants* moving on to more attractive conditions of life in the counties just to the south.\* But even these large figures do not adequately represent the British American element within our boundaries, because they leave out of account the native-born of Canadian parents who have been crossing our borders for over a generation.

If we turn to northern Italy, where a mountain barrier might have been expected to segregate the long-headed Mediterranean stock from the broad-headed Alpine stock, we find as a matter of fact that the ethnic type throughout the Po basin is markedly brachycephalic and becomes more pronounced along the northern boundary in the Alps, till it culminates in Piedmont, along the frontier of France, where it becomes identical with the broad-headed Savoyards.† More than this, Provençal French is spoken in the Dora Baltea valley of Piedmont; and along the upper Dora Riparia and in the neighbouring valleys of the Chisone and Pellice are the villages of the refugee Waldenses, who speak an idiom allied to the Provençal. More than this, the whole Piedmontese Italian is characterized by its approach to the French, and the idiom of Turin sounds very much like Provençal.‡ To the north there is a similar exchange between Italy and Switzerland with the adjacent Austrian province of the Tyrol. In the rugged highlands of the Swiss Grisons bordering upon Italy, we find a pure Alpine stock, known to the ancients as the Rhaetians, speaking a degenerate Latin tongue called Romansch, which still persists also under the names of Ladino and Friulian in the Alpine regions of the Tyrol and Italy. In fact, the map of the linguistic boundaries in the Grisons shows the dovetailing of German, Italian, and Romansch in a broad zone.§ The traveller in the southern Tyrol becomes accustomed in the natives to the combination of Italian colouring, German speech, and Alpine head form; whereas, if on reaching Italy he visits the hills back of Vicenza, he finds the German settlements of Tredici and Sette Comuni, where German customs, folklore, language, and German types of faces still persist, survivals from the days of German infiltration across the Brenner Pass.||

Where Slavs and Teutons come together in Central Europe, their race border is a zone lying approximately between 14 and 24 degrees East Longitude; it is crossed by alternate peninsulas of predominant

\* Ibid. Based on comparison of Tables 15 and 33 for the States mentioned.

† W. Z. Ripley, *Races of Europe*, pp. 250-253. New York, 1899.

‡ W. Deecke, *Italy*, pp. 325, 347, 349. Translated from the German. London, 1904.

§ Sydow-Wagner, *Methodischer Schul-Atlas Völker und Sprachenkarten*, No. 13. Gotha, 1905.

W. Z. Ripley, *Races of Europe*, pp. 282-284. New York, 1899.

|| Ibid. pp. 255-257. W. Deecke, *Italy*, p. 357. London, 1904.

Germans and Austrians from the one side, Czechs and Poles from the other, the whole spattered over by a sprinkling of the two elements. Rarely, and then only for short stretches, do political and



ethnic boundaries coincide. The northern frontier hem of East Prussia lying between the River Niemen and the political line of demarcation is quite as much Lithuanian as German, while German stock dots the whole surface of the Baltic provinces of Russia as

far as St. Petersburg. The eastern rim of the Kaiser's empire as far south as the Karpathians presents a broad band of the Polish race, averaging about fifty kilometers (30 miles) in width, sparsely sprinkled with German settlements; these are found farther east also as an ethnic archipelago dotting the wide Slav area of Poland. The enclosed basin of Bohemia, protected on three sides by mountain walls and readily accessible to the Slav stock at the sources of the Vistula, enabled the Czechs to penetrate far westward and there maintain themselves; but in spite of encompassing mountains, the inner or Bohemian slopes of the Boehmer Wald, Erz, and Sudetes ranges constitute a broad girdle of almost solid German population.\* In the Austrian provinces of Moravia and Silesia, which form the southeastward continuation of this Slav-German boundary zone, 60 per cent. of the population are Czechs, 33 per cent. are German, and 7 per cent., found in the eastern part of Silesia, are Poles.†

An ethnic map of the western Muscovite Empire in Europe shows a marked infiltration into White and Little Russia of West Slavs from Poland, and in the province of Bessarabia alternate areas of Russians and Roumanians. The latter in places form an unbroken ethnic expansion from the home kingdom west of the Pruth, extending in solid bands as far as the Dniester, and throwing out ethnic islands between this stream and the Bug. Southern Bessarabia is peopled largely by Bulgarians who have spread across the Danube delta from the steppes of the Dobruja, formerly Bulgarian but since 1881 Roumanian territory.

In the northern provinces of Russia, in the broad zone shared by the aboriginal Finns and the later-coming Slavs, Wallace found villages in every stage of Russification. "In one everything seemed thoroughly Finnish; the inhabitants had a reddish-olive skin, very high cheek bones, obliquely set eyes, and a peculiar costume; none of the women and very few of the men could understand Russian and any Russian who visited the place was regarded as a foreigner. In the second, there were already some Russian inhabitants; the others had lost something of their purely Finnish type, many of the men had discarded the old costume and spoke Russian fluently, and a Russian visitor was no longer shunned. In a third, the Finnish type was still further weakened; all the men spoke Russian, and nearly all the women understood it; the old male costume had entirely disappeared and the old female was rapidly following it; and intermarriage with the Russian population was no longer rare.

\* Sydow-Wagner, *Methodischer Schul-Atlas Völker und Sprachenkarten*, No. 13. Gotha, 1905.

† Hugh R. Mill, *International Geography*, p. 309. New York, 1902.



In a fourth, intermarriage had almost completely done its work, and the old Finnish element could be detected merely in certain peculiarities of physiognomy and accent." This amalgamation extends to their religions—prayers wholly pagan devoutly uttered under the shadow of a strange cross, next the Finnish god Yumak sharing honours equally with the Virgin, finally a Christianity pure in doctrine and outward forms except for the survival of old pagan ceremonies in connection with the dead."\*

At the confluence of the Volga and Kama rivers, this boundary zone of Russians and Finns meets the borderland of the Asiatic Mongols; and here is found an intermingling of races, languages, religions, and customs scarcely to be equalled elsewhere. Finns are infused with Tartar as well as Russian blood, and Russians show Tartar as well as Finnish traits. The Bashkirs, who constitute an ethnic peninsula running from the solid Mongolian mass of Asia, show every type of the mongrel.†

If we turn to Asia and examine the western race boundary of the expanding Chinese, we find that a wide belt of mingled ethnic elements, hybrid languages, and antagonistic civilizations marks the transition from Chinese to Mongolian and Tibetan areas. The eastern and southern frontiers of Mongolia, formerly marked by the Great Wall, are now difficult to define, owing to the steady encroachment of the agricultural Chinese on the fertile edges of the plateau, where they have converted the best-watered pastures of the Mongols into millet fields and vegetable gardens, leaving for the nomad's herds the more sterile patches between.‡ Every line of least resistance—climatic, industrial, commercial—sees the Chinese widening this transitional zone. He sprinkles his crops over the "Land of Grass," invades the trade of the caravan towns, sets up his fishing station on the great northern bend of the Hoang-ho in the Ordos country, three hundred miles beyond the Wall, to exploit the fishing neglected by the Mongols.§ The well-watered region of the Nan-Shan ranges has enabled him to drive a long, narrow ethnic peninsula, represented by the westward projection of Kansu Province between Mongolia and Tibet, into the heart of the Central Plateau. Here the nomad Si Fan tribes dwell side by side with Chinese farmers,|| who themselves show a strong infusion of the Mongolian and

\* D. M. Wallace, *Russia*, pp. 151-155. New York, 1904.

† W. Z. Ripley, *Races of Europe*, p. 362. New York, 1899.

‡ Archibald Little, *The Far East*, Map p. 8 and pp. 171-172. Oxford, 1905.

§ M. Huc, *Travels in Tartary, Thibet and China, 1844-1846*. Vol. I, pp. 2-4, 21, 197-201, 284. Reprint, Chicago, 1898.

|| *Ibid.* Vol. I, pp. 166-170.

|| *Ibid.* Vol. II, p. 23.

Tibetan blood to the north and south, and whose language is a medley of all three tongues.\*

In easternmost Tibet, in the elevated province of Minjak (2,600 meters or 8,500 feet), M. Huc found in 1846 a great number of Chinese from the neighbouring Sze-Chuan and Yunnan districts keeping shops and following the primary trades and agriculture. The language of the Tibetan natives showed the effect of foreign intercourse; it was not the pure speech of Lhasa, but was closely assimilated to the idiom of the neighbouring Si Fan speech of Sze-Chuan and contained many Chinese expressions. He found also a modification of manners, customs, and costumes in this peripheral Tibet; the natives showed more of the polish, cunning, and covetousness of the Chinese, less of the rudeness, frankness, and strong religious feeling characteristic of the western plateau man.† Just across the political boundary in Chinese territory, the border zone of assimilation shows predominance of the Chinese element with a strong Tibetan admixture both in race and civilization.‡ Here Tibetan traders with their yak caravans are met on the roads or encamped in their tents by the hundred about the peripheral towns, whither they have brought the wool, sheep, horses, hides and medicinal roots of the rough highland across that "wild borderland which is neither Chinese nor Tibetan." The Chinese population consists of hardy mountaineers, who eat millet and maize instead of rice. The prevailing architecture is Tibetan and the priests on the highways are the red and yellow lamas from the Buddhist monasteries of the plateau. "The Country is a cross between China and Tibet."§

Even the high wall of the Himalayas does not suffice to prevent similar exchanges of ethnic elements and culture between southern Tibet and northern India. Lhasa and Giamda harbour many emigrants from the neighbouring Himalayan state of Bhutan, allow them to monopolize the metal industry, in which they excel, and to practise undisturbed their Indian form of Buddhism.|| The southern side of this zone of transition is occupied by a Tibetan stock of people inhabiting the Himalayan frontiers of India and practising the Hindu religion.¶ In the hill country of northern Bengal natives are to be seen with the Chinese queue hanging below a Hindu turban, or

\* Ibid. Vol. I, pp. 312-313.

† Ibid. Vol. II, pp. 319-322, 327.

‡ M. Huc, *Journey through the Chinese Empire*, Vol. I, p. 36, New York, 1871.

§ Isabella Bird Bishop, *The Yangtze Valley, and Beyond*, Vol. II, pp. 70-71, 88, 91, 92, 104-109, 113, 117, 133, 134, 155, 194, 195. London, 1900.

¶ M. Huc, *Travels in Tartary, Thibet and China*, 1844-1846, Vol. II, pp. 155-156, 264. Reprint, Chicago, 1898.

¶ Statistical Atlas of India, pp. 61-62. Maps. Calcutta, 1895.

wearing the Hindu caste mark on their broad Mongolian faces. With these are mingled genuine Tibetans who have come across the border to work in the tea plantations of this region.\*

The assimilation of culture within a boundary zone is in some respects the result of race amalgamation, as, for instance, in costume, religion, manners and language; but in economic points it is often the result of identical geographic influences to which both races are alike subjected. For example, scarcity of food on the arid plateau of Central Asia makes the Chinese of western Kansu eat butter and curds as freely as do the pastoral Mongols, though such a diet is obnoxious to the purely agricultural Chinese of the lowlands.† The English pioneer in the trans-Allegheny wilderness shared with the Indians an environment of trackless forests and savage neighbours; he was forced to discard for a time many essentials of civilization, both material and moral. Despite a minimum of race intermixture, the men of the Cumberland and Kentucky settlements became assimilated to the life of the red man; they borrowed his scalping knife and tomahawk, adopted his method of ambush and extermination in war; like him they lived in great part by the chase, dressed in furs and buckskin, and wore the noiseless moccasin. Here the mere fact of geographical location on a remote frontier, and of almost complete isolation from the centres of English life on the Atlantic slope, and the further fact of persistent contact with a lower status of civilization, resulted in a temporary return to primitive methods of existence, till the settlements secured an increase of population adequate for higher industrial development and for defence.

A race boundary involves almost inevitably a cultural boundary, often, too, a linguistic and religious, occasionally a political boundary. The last three are subject to wide fluctuation, frequently overstepping all barriers of race and contrasted civilizations. Though one often accompanies another, it is necessary to distinguish the different kinds of boundaries and to estimate their relative importance in the history of a people or state. We may lay down the rule that the greater, more permanent, and deep-seated the contrasts on the two sides of a border, the greater is its significance; and that, on this basis, boundaries rank in importance, with few exceptions, in the following order: racial, cultural, linguistic, and political. The less marked the contrasts, in general, the more rapid and complete the process of assimilation in the belt of borderland.

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\* Eliza R. Scidmore, *Winter India*, pp. 106-108. New York, 1903.

† M. Huc, *Travels in Tartary, Thibet and China, 1844-1846*, Vol. I, pp. 312-313. Reprint, Chicago, 1898.

The significance of the border zone of assimilation for political expansion lies in the fact that it prepares the way for the advance of the state boundary from either side; in it the sharp edge of race and cultural antagonism is removed, or for this antagonism a new affinity may be substituted. The zone of American settlement, industry, and commerce which in 1836 projected beyond the political boundary of the Sabine River over the eastern part of Mexican Texas facilitated the later incorporation of the State into the Union, just as a few years earlier the Baton Rouge District of Spanish West Florida had gravitated to the United States by reason of the predominant American element there, and thus extended the boundary of Louisiana to the Pearl River. When the political boundary of Siberia was fixed at the Amoor River, the Muscovite Government began extending the border zone of assimilation far to the south of that stream by the systematic Russification of Manchuria with a view to its ultimate annexation. Schleswig-Holstein and Alsace-Lorraine, by reason of their large German population, have been readily incorporated into the German Empire. Only in Lorraine has a considerable French element retarded the process. The considerable sprinkling of Germans over the Baltic provinces of Russia and Poland west of the Vistula, and a certain Teutonic stamp of civilization which these districts have received, would greatly facilitate the eastward extension of the German Empire; while their common religions, both Protestant and Roman Catholic, would help obliterate the old political fissure. Thus the borderland of a country, so markedly differentiated from its interior, performs a certain historical function, and becomes, as it were, an organ of the living, growing race or state.

Location on a frontier involves remoteness from the centre of national, cultural, and political activities; these reach their greatest intensity in the core of the nation and exercise only an attenuated influence on the far-away borders, unless excellent means of communication keep up a circulation of men, commodities, and ideas between centre and periphery. For the frontier, therefore, the centripetal force is weakened; the centrifugal is strengthened often by the attraction of some neighbouring state or tribe, which has established bonds of marriage, trade, and friendly intercourse with the outlying community. Moreover, the mere infusion of foreign blood, customs, and ideas, especially a foreign religion, which is characteristic of a border zone, invades the national solidarity. Hence we find that a tendency to political defection constantly manifests itself along the periphery. A long reach weakens the arm of

authority, especially where serious geographical barriers intervene; hence border uprisings are usually successful, at least for a time. When accomplished, they involve that shrinkage of the frontiers which we have found to be the unmistakable symptom of national decline.

This defection shows itself most promptly in conquered border tribes of different blood who lack the bond of ethnic affinity, and whose remoteness emboldens them to throw off the political yoke. The decay of the Roman Empire, after its last display of energy under Trajan, was registered in the revolt of its peripheral districts beyond the Euphrates, Danube, and Rhine, as also in the rapid Teutonization of eastern Gaul, which here prepared the way for the assertion of independence. The border satraps of the ancient Persian Empire were constantly revolting, as the history of Asia Minor shows. Aragon, Old Castile, and Portugal were the first kingdoms in the Iberian Peninsula to throw off Saracen dominion. Mountain ranges and weary stretches of desert roads enabled the rebellions in Chinese Turkestan and the border districts of Dzungaria in 1863 to be maintained for several years.\*

A feeble grasp upon remote peripheral possessions is often further weakened by the resistance of an immigrant population from beyond the boundary, which brings with it new ideas of government. This was the geographical history of the Texan revolt. A location on the far northern outskirts of Mexican territory, some twelve hundred miles from the capital, rendered impossible intelligent government control, the enforcement of the laws, and prompt defence against the Indians. Remoteness weakened the political cohesion. More than this, the American ethnic boundary lapped far over eastern Texas, forming that border zone of two-fold race which we have come to know. This alien stock, antagonistic to the national ideals emanating from the City of Mexico, dominant over the native population by reason of its intelligence, energy, and wealth, ruptured the feeble political bond and asserted the independence of Texas. Quite similar was the history of the "Independent State of Acre," which in 1899 grew up just within the Bolivian frontier under the leadership of Brazilian caoutchouc gatherers, resisted the collection of taxes by the Bolivian Government, and four years later secured annexation to Brazil.†

Even when no alien elements are present to weaken the race bond, if natural barriers intervene to obstruct and retard communi-

\* Alexis Krausse, *Russia in Asia*, pp. 174-175. New York, 1899.

† Charles E. Akers, *History of South America*, 1854-1904, p. 562. New York, 1904.

cation between centre and periphery, the frontier community is likely to develop the spirit of defection, especially if its local geographic, and hence social, conditions are markedly different from those of the governing centre. This is the explanation of that demand for independent statehood which was rife in our trans-Allegheny settlements from 1785 to 1795, and of that separatist movement which advocated political alliance with either the British colonies to the north or the Spanish to the west, because these were nearer and offered easier access to the sea. A frontier location and an intervening mountain barrier were important factors in the Whisky Rebellion in western Pennsylvania, just as similar conditions later suggested the secession of the Pacific States from the Union. Disaffection with the Government was manifested by the Trek Boers of early South Africa, "especially by those who dwell in the outlying districts where the Government had exerted and could exert little control." In 1795 the people of Graaf-Reinet, a frontier settlement of that time, revolted against the Dutch South African Company and set up a miniature republic.\*

When to a border situation is added a geographic location affording conditions of long-established isolation, this tendency to maintain political autonomy becomes very pronounced. This is the explanation of so many frontier mountain states that have retained complete or partial independence, such as Nepal, Bhutan, the Asturias, which successfully withstood Saracen attack, and Montenegro, which has repelled alike Venetian, Servian, and Turkish dominion. Europe especially has numerous examples of these unabsorbed border states, whose independence represents the equilibrium of the conflicting political attractions about them. But all these smallest fragments of political territory have either some commercial or semi-political union with one or another of their neighbours. The little independent principality of Liechtenstein, wedged in between Switzerland and the Tyrol, is included in the customs union of Austro-Hungary; so the small, independent monarchy of Luxemburg, which has been attached in turn to all the great states which have grown up along its borders, is included in the *Zollverein* of Germany. The republic of Andorra, far up in a lofty valley of the Pyrenees, which has maintained its freedom for a thousand years, acknowledges certain rights of suzerainty exercised by France and the Spanish bishopric of Urgel.† A link between the two

\* Bryce, *Impressions of South Africa*, pp. 108-109. New York, 1897.

† H. R. Mill, *International Geography*, p. 378. New York, 1902.



neighbouring states and yet independent of them, it is politically a typical product of a border environment.

Oftentimes a state gains by recognizing this freedom-loving spirit of the frontier, and by turning it to account for national defence along an exposed boundary. In consequence of the long wars between Scotland and England, to the Scotch barons having estates near the Border were given the Wardenships of the Marches, offices of great power and dignity; and their clans, accustomed only to the imperfect military organization demanded by the irregular but persistent hostilities of the time and place, developed a lawless spirit. Prohibited from agriculture by their exposed location, they left their fields waste, and lived by pillage and cattle-lifting from their English and even their Scotch neighbours. The valour of these southern clans, these "reivers of the Border," was the bulwark of Scotland against the English, but their mutinous spirit resisted the authority of the king and led them often to erect semi-independent principalities.\*

China has fringed her western boundaries with quasi-independent tribes whose autonomy is assured and whose love of freedom is a guarantee of guerilla warfare against any invader from Central Asia. The Mantze tribes in the mountain borders of Sze-Chuan province have their own rulers and customs, and only pay tribute to China.† The highlands of Kansu are sprinkled with such independent tribes. Sometimes a definite bargain is entered into—a self-governing military organization and a yearly sum of money in return for defence of the frontier. The Mongol tribes of the Charkar country or "Borderland" just outside the Great Wall northwest of Peking constitute a paid army of the Emperor to guard the frontier against the Khalkhas of northern Mongolia, the tribe of the Genghis Khan.‡ Similarly, semi-independent military communities for centuries made a continuous line of barriers against the raids of the steppe nomads along the southern and southeastern frontiers of Russia from the Dnieper to the Ural Rivers. These were the "Free Cossacks," located on the debatable ground between the fortified frontier of the agricultural steppe and marauding Crimean Tartars. Nominally subjects of the Czar, they obeyed him when it suited them, and on provocation rose in open revolt. The Cossacks of the Dnieper, who to the middle of the seventeenth century formed Poland's border de-

\* Wm. Robertson, *History of Scotland*, pp. 19-20. New York, 1831. The Scotch Borderers, *Littell's Living Age*, Vol. 40, p. 180.

† Isabella Bird Bishop, *The Yangtze Valley and Beyond*, Vol. II., pp. 209-210. London, 1900.

‡ M. Hue, *Travels in Tartary, Thibet and China*, 1844-1846, Vol. 1, pp. 41, 42, 97. Reprint. Chicago, 1898.

fence against Tartar invasion, were jealous of any interference with their freedom. They lent their services on occasions to the Sultan of Turkey, and even to the Crimean Khan; and finally, in 1681, attached themselves and their territory to Russia.\* Here speaks that spirit of defection which is the natural product of the remoteness and independence of frontier life. The Russians also attached to themselves the Kalmucks located between the lower Volga and Don, and used them as a frontier defence against their Tartar and Kirghiz neighbours. In this case, as in that of the Cossacks and the Charkars of eastern Mongolia, we have a large body of men living in the same arid grassland, leading the same pastoral life, and carrying on the same kind of warfare as the nomadic marauders whose pillaging, cattle-lifting raids they aim to suppress. The imperial orders to the Charkars limit them strictly to the life of herdmen, with the purpose of maintaining their mobility and military efficiency. So in olden times, for the Don Cossacks agriculture was prohibited on pain of death, lest they should lose their taste for the live-stock booty of a punitive raid. A still earlier instance of this utilization of border nomads is found in the first century after Christ, when the Romans made the Arabian tribe of Beni Jafre, dwelling on the frontier of Syria, the warders of the eastern marches of the Empire.

The advancing frontier of an expanding people often carries them into a sparsely settled country where the unruly members of society can with advantage be utilized as colonists. After centralized and civilized Russia began to encroach with the plough upon the pastures of the steppe Cossacks, and finally suppressed these military republics, the more turbulent and obstinate remnants of them she colonized along the Kuban and Terek rivers, to serve as bulwarks against the incursions of the Caucasus tribes and as the vanguard of the advance southward.†

This is one principle underlying the transportation of criminals to the frontier. They serve to hold the new country. The Russian advance into Siberia has, since 1709, set up its milestones in settlements formed of prisoners of war, political exiles, and worse offenders.‡ Penal colonists located on the shores of Kamtchatka helped build and man the crazy boats which set out for Alaska at the end of the eighteenth century. China settles its thieves and cheats among the villages of its own border provinces of Shensi§ and Kansu;

\* D. M. Wallace. *Russia*, pp. 352-356. New York, 1904. Article on Cossacks in the *Encyclopædia Britannica*.

† D. M. Wallace. *Russia*, p. 358. New York, 1904. Walter K. Kelly, *History of Russia*, Vol. II, pp. 394-395. London, 1881.

‡ Alexis Krausse, *Russia in Asia*, pp. 43, 53. New York, 1899.

§ Francis H. Nichols, *Through Hidden Shensi*, pp. 139-140. New York, 1902.

but its worst criminals it transports far away to the Ili country on the western frontier of the Empire, where they have doubtless contributed to the spirit of revolt that has there manifested itself.\*

The abundance of opportunity and lack of competition in a new frontier community, its remoteness from the centre of authority, and its imperfect civil government serve to attract thither the shiftless and vicious, as well as the sturdy and enterprising. The society of the early Trans-Allegheny frontier included both elements. The lawless who drifted to the border formed gangs of horse thieves, highwaymen, and murderers, who called forth from the others the summary methods of lynch law.† North Carolina, which in its early history formed the southern frontier of Virginia, swarmed with ruffians who had fled thither to escape imprisonment or hanging, and whose general attitude was to resist all regular authority and especially to pay no taxes.‡ Similarly, that wide belt of mountain forest which forms the waste boundary between Korea and Manchuria is the resort of bandits who have harried both sides of the border ever since this neutral district was established in the thirteenth century.§ The frontier communities of the Russian Cossacks in the seventeenth and eighteenth centuries were regular asylums for runaway serfs and peasants who were fleeing from taxation; their hetmans were repeatedly fugitive criminals. The eastern border of Russia formed by the Volga basin in 1775 was described as "an asylum for malcontents and vagabonds of all kinds, ruined nobles, disrobed monks, military deserters, fugitive serfs, highwaymen, and Volga pirates"—disorderly elements which contributed greatly to the insurrection led by the Ural Cossacks in that years.|| "The Debatable Land," a tract between the Esk and Sark rivers, formerly claimed by both England and Scotland, was long the haunt of thieves, outlaws and vagabonds, as indeed was the whole Border, subject as it was to the regular jurisdiction of neither side.¶ Just beyond the political boundary, where police authority comes to an end and where pursuit is cut short or retarded, the fleeing criminal finds his natural asylum. Hence all border districts tend to harbour undesirable refugees from the other side. Deserters and outlaws from China proper sprinkle the eastern districts of Mon-

\* M Huc, *Travels in Tartary, Thibet and China*, 1844-1846, Vol. 1, p. 23. Reprint, Chicago, 1898.

† Theodore Roosevelt, *The Winning of the West*, Vol. 1, pp. 130-132. New York, 1895.

‡ John Fiske, *Old Virginia and Her Neighbors*, Vol. II, pp. 311, 315-321. Boston, 1897.

§ Archibald Little, *The Far East*, p. 249. Oxford, 1905.

|| Alfred Rambaud, *History of Russia*, Vol. II, pp. 45, 199-200. Boston, 1886.

¶ Malcolm Lang, *History of Scotland*, Vol. 1, pp. 42-43. London, 1800. *The Scotch Borderland*, *Gentleman's Magazine*, Vol. CCLX, p. 191, Feb., 1886.

golia.\* Marauding bands of Apaches and Sioux, after successful depredations on American ranches, for years fled across the line into Mexico and Canada before the hammering hoof-beats of Texas Ranger and United States cavalry, until a treaty with Mexico in 1882, authorizing such armed pursuit to cross the boundary, cut off at least one asylum.† Our country exchanges other undesirable citizens with its northern and southern neighbours in cases where no extradition treaty provides for their return; and the borders of the individual states are crossed and recrossed by shifty gentlemen seeking to dodge the arm of the law. The fact that so many State boundaries fall in the southern Appalachians, where illicit distilling and feud murders provide most of the cases on the docket, has materially retarded the suppression of these crimes by increasing the difficulty both of apprehending the offender and of subpœnaing the reluctant witness.

Dissatisfied, oppressed, or persecuted members of a political community are prone to seek an asylum across the nearest border, where happier or freer conditions of life are promised. There they contribute to that mixture of race which characterizes every boundary zone, though as an embittered people they may also help to emphasize any existing political or religious antagonism. The Revocation of the Edict of Nantes in 1685 was followed by an exodus of Huguenots from France to the Protestant states of Switzerland, the Palatinate of the Rhine, and Holland, as also across the Channel into southern England; just as in recent years the Slav borderland of eastern Germany has received a large immigration of Polish Jews from Russia. When the Polish king in 1571 executed the leader of the Dnieper Cossacks, thousands of these bold borderers left their country and joined the community of the Don; and in 1722 after the Dnieper community had been crushed by Peter the Great, a similar exodus took place across the southern boundary into the Crimea, whereby the Tartar horde was strengthened, just as a few years before, during an unsuccessful revolt of the Don Cossacks, some two thousand of the malcontents crossed the southern frontier to the Kuban River in Circassia.‡ The establishment of America independence in 1783 saw an exodus of loyalists from the United States into the contiguous districts of Ontario, New Brunswick, and Spanish Florida; five years later discontent with the Federal Government for its dilatory opposition to the occlusion of the Mississippi

\* Friedrich Ratzel, *History of Mankind*, Vol. III, p. 175. London, 1896.

† A. B. Hart, *Foundations of American Foreign Policy*, pp. 81-82. New York, 1901.

‡ Alfred Rambaud, *History of Russia*, Vol. II, pp. 45, 50. Boston, 1886.

and the lure of commercial betterment sent many citizens of the early Trans-Allegheny commonwealths to the Spanish side of the Mississippi,\* while the Natchez District on the east bank of the river contained a sprinkling of French who had become dissatisfied with Spanish rule in Louisiana and changed their domicile.

These are some of the movements of individuals and groups which contribute to the blending of races along every frontier, and make of the boundary a variable zone as opposed to the rigid artificial line, in terms of which we speak.

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\* Justin Winsor, *The Westward Movement*, p. 366. Boston, 1899.

## VIRGINIA TRADE AND COMMERCE.

BY

G. T. SURFACE.

Excepting the complicated factor of human traffic, the commercial relations in Virginia under slavery were surprisingly simple, as compared with the social ideals and customs of the time. The explanation for this is manifest, in that the large labour surplus enabled the owners to be producers of most of the articles consumed, and at the same time produce a large surplus of tobacco, the most profitable commodity in the export trade. In 1790, Virginia ranked first in the total value of exports (\$3,131,865). By 1830 the export trade had increased to \$4,791,644; while for the same year the imports only aggregated \$405,739, showing how adequately the demands were met by the home manufacturers.

The passing of the War crisis, with its destruction to life and property, and the emancipation of slaves, made necessary a new system of production, which in turn brought about a reactionary adjustment of Virginia's commercial relations. The decade following the Civil War is the period which marks the beginning of a new era in the industrial and commercial development of the State. We shall, therefore, discuss briefly the factors which gave impetus and foundation to the succeeding order. The immediate and most urgent demand was to become self-sustaining, by the production of food-stuffs and clothing, since all of the surplus had been consumed during the four-years' struggle, which centred on Virginia territory, and from which the people of the State suffered most. Co-ordinate with this was the demand for restoring the property losses incurred.

Notwithstanding the fact that thousands of negroes migrated to the cities of the North and the cotton fields of the South, there was still a surplus of negro labourers, but thoroughly disorganized and demoralized; and few of the landowners had the capital with which to employ labour. Capital far in excess of the surplus had been invested in negroes, so that bankruptcy was more general than surplus capital. The large tobacco surplus was, therefore, ruled out by the conditions at home, and a diversified agricultural production on a small scale made necessary. This initiative was promoted and fostered by conditions outside of the State. Cotton rose to fabulous prices, and in the cotton States all energy was bent to a maximum production. They could not afford to raise poor corn and wheat crops on good cotton land, when cotton was selling at fifty to sixty cents per pound. There developed, in consequence, a great demand for provisions in the cotton States. The border States—Virginia, Tennessee, and Kentucky—were adapted to grains, grasses, and the live-stock industries, but not to cotton. The stimulus for diversified agriculture in these States was therefore much intensified by the situation in the cotton States. But the situation in the North was no less favourable toward this same development. While the South had been purchasing negroes and growing negroes, the North had been building factories, extending trade, and accumulating a large surplus. As the war progressed prices rose and Northern industries flourished, as a result of which there was more money in the North at the close of the war than at the beginning. Following the war the demand for cotton and woollen goods, farming implements, and labour-saving machinery was unprecedented, and so the Northern factories entered upon a new era of development and prosperity, which rapidly increased the urban population. As a result, instead of the manufacturing States having a surplus of food-stuffs, they could scarcely supply the home demand.

Without discussing the beneficial effects of emancipation upon the production and trade of the State, it must be apparent to every student of Virginia's economic and industrial development that the change in the system was most fortunate. It induced an unwonted economy, which of itself was a discipline of far-reaching importance; discontinued the general practice of wholesale timber destruction; labour-saving machinery was purchased; the soil better cultivated; the property improved; the children schooled; and the surplus gradually increased.

Virginia is just now entering upon another era of industrial development, which may be characterized as the *era of scientific*



*agriculture and diversified manufacture.* This was made possible by the sounder and more economic bases of the *post-bellum* policies.

We shall discuss the present trade conditions under the following divisions: Intra-State Commerce, or the sale and exchange of products between different sections of the State: Inter-State Commerce, the trade relations with other States; and Foreign Commerce.

#### INTRA-STATE COMMERCE.

REGIONAL.\*—The distinct zones of production conform in general to the natural geographic divisions.† *Tidewater* produces a large surplus of garden products, peanuts, fish, and oysters, and these are the most important shipments westward; but they are more than balanced by the coal, lumber, hay, grain, and tobacco received from the western part of the State for home consumption.

*Piedmont*‡ produces a smaller surplus proportional to its area than either *Tidewater* or the *Valley*, but its productions are so varied that the deficiency of one part of the region could be supplied from the surplus of another, if developed with reference to economic adaptation. Coal from *Appalachia* is the most important shipment into *Piedmont*. Tobacco§ constitutes the largest surplus of southern *Piedmont*, and live-stock the largest of northern *Piedmont*. Fully three-fourths of the total tobacco crop is manufactured within the area. The important manufacturing and distributing points are Richmond,|| Petersburg,¶ Lynchburg, Danville, Chatham, and Martinsville.

The trade of *Blue Ridge* consists chiefly of the sale of live-stock, lumber, and fruits; and the purchase of furniture, groceries, clothing, and machinery. This plateau section has more live-stock\*\* per square mile than any of the other geographic divisions.

The *Valley* produces a large surplus of grain, hay, live-stock, winter vegetables, and fruit. A large part of the provision surplus of the southern *Valley* is marketed in the mining-districts of *Virginia-West Virginia*, which is contiguous territory. There is still a small surplus of forest products, but the cultivatable land is being rapidly

\* Production and trade of cities will be considered under a separate head.

† The natural geographic divisions of the State are *Tidewater*, or the *Coastal Plain*; *Piedmont*, or the plateau region; the *Blue Ridge*; the *Valley*; and *Appalachia*.

‡ Middle *Virginia* is here considered as a part of *Piedmont*.

§ Sixteen counties in *Piedmont* produced, in 1900, more than 3,000,000 pounds each. *Pittsylvania* ranked first, 17,088,550 pounds; *Halifax* second, 13,077,200 pounds; and *Mecklenburg* third, 7,368,220 pounds.

|| On the *Piedmont-Tidewater* boundary.

¶ *Floyd*, *Carroll* and *Grayson* are the only counties situated wholly in this division.

\*\* Cattle, 43 per square mile; sheep, 46.3 per square mile (1900).

deforested, and cannot be reckoned as an important and permanent factor of trade.

The wealth of the Valley is greater *per capita* than is that of any other division, which makes it a large purchaser of farming implements, household furniture, and general merchandise.

*Appalachia* produces a large surplus of coal, coke, lumber, and live-stock. The coal is shipped to all parts of the State. The cattle are marketed locally, in the eastern cities, and as exports. Tazewell, Russell, Craig, Bland, and Giles counties form the agricultural belt of *Appalachia*, by virtue of a large part of the area having a strong residual limestone soil. Live-stock—especially small cattle and sheep—and lumber are the important sources of revenue in northern *Appalachia*.

The mining counties—Wise, Russell, Buchanan, Dickenson, and Lee—are large purchasers of provisions, merchandise, mining machinery, draft horses, and alcoholic drinks.

#### CITIES.\*

Since no separate record of the State and inter-State traffic is kept, it is impossible to give figures as to the exact amount of shipments from the manufacturing and distributing points. The discussion is, however, based upon a careful study of the inter-State and foreign trade, reports and statements from the various Boards of Trade, and personal observations in representative sections.

*Richmond* ranks first in population; is served by more railroads than any other point in the State; is largest manufacturing, jobbing, and distributing centre; and is the most centrally located† city in the State. There were 1,554 factories in operation in 1906, the sales of which aggregated \$77,432,692. Of the manufactures, tobacco led with 59 factories, and a total product of \$20,195,336. The following valuations are given for the respective classes of manufactures: Iron products (including farming implements), \$9,876,482; fertilizers, chemicals, iron and cement products, \$8,376,120; and leather products, \$3,361,077. The jobbing trade for 1906 aggregated \$61,524,275. All of the important articles of manufacture are sold throughout the State.

The largest purchases made by the city consist of tobacco, lumber, grain, flour,‡ leather, vegetables, and poultry products.

\* This part of the discussion relates only to the *intra-state trade* of the cities.

† If we draw a circle around *Richmond* as the centre on a radius which will include *Accomac County*, this circle will include four-fifths of the total *Virginia* territory.

‡ The *Richmond Grain and Cotton Exchange* received during 1905, 4,500,000 bushels of grain, and 162,200 barrels of flour.

*Greater Norfolk (including Norfolk, Portsmouth, Berkley and U. S. Navy Yard).*—Norfolk is not only Virginia's most important port, but one of the most important in the South. Among Southern ports it ranks first in lumber, first in peanuts, second in coal, and fourth in cotton shipments.

The city is situated at the junction of the southern and western branches of the Elizabeth River, which is tributary to the James River Estuary, of which Hampton Roads is the connecting channel with the Chesapeake Bay. The James River has no bar at its mouth, and there are 30 feet of water at low tide. The distance of Norfolk from the ocean is 32 miles, and from Hampton Roads 8 miles. As to the special advantages of the Norfolk harbour, I quote from the report of Commodore M. F. Maury: "Norfolk, be it remembered, with its deep waters, spacious harbors and free outlet between the Capes of Virginia to the sea, occupies geographically what the early discoverers thought would be, and what physical geography claims is, the most commanding commercial position along the whole Atlantic seaboard of the United States. Its natural advantages make it so."\*

There are 30 miles of wharf frontage. The outer harbour contains 50 square miles of anchorage ground, with a depth of 50 feet; and the inner harbour (Elizabeth River and its branches) has 1,000 acres of anchorage ground, with a depth of 28 feet. Portsmouth† is just across the river from Norfolk, and has a harbour frontage of one mile.

The traffic of the southern branch of the Elizabeth River in 1905 showed a great increase over any previous year, being about 11,000,000 tons, valued at more than \$500,000,000.‡

Norfolk ranks first as a rehandling, and foreign and domestic export point; and in the variety and volume of manufactures ranks next to Richmond. The largest enterprise is the United States Navy Yard at Portsmouth, which employs more than 2,000 wage-earners at a total cost of \$2,000,000 per year. The following important industries enter into the general supplies and traffic of the State: Fertilizer, tobacco, lumber and iron mills, cotton factories, cotton compresses, packing-houses, peanut factories, fisheries, brick factories, farming implements, and shoe factories. The total value of manufactures was estimated for 1905 at \$34,400,000. Fertilizer, tobacco (manufactured), canned meats, peanuts, and oysters are

\* Physical Survey of Virginia, M. F. Maury, 1876, p. 20.

† Considered a part of Greater Norfolk.

‡ Report of Chief of Engineers, U. S. Army, 1906, p. 238.

shipped to all parts of the State. The Norfolk jobbing and wholesale houses do a large business in Tidewater, eastern and south-eastern Piedmont, and North Carolina. It is the largest horse market in the South, the aggregate sales of 1905 being \$2,500,000.

The volume of the traffic going into Greater Norfolk far exceeds that of any other point in Virginia. The most important classes are in the order of tonnage: Lumber, iron, coal, grain, garden products, live-stock, cotton,\* and tobacco. The lumber comes from Appalachia, the Valley, Blue Ridge, Piedmont, and from North Carolina, Tennessee, and West Virginia; the coal from Appalachia, the States of Kentucky and West Virginia; the grain and live-stock from all parts of the State, and the Middle West; the garden products from Tidewater and Piedmont chiefly, the cotton from Virginia, North and South Carolina; and the tobacco from Piedmont.

*Newport News*† is situated on the northern shore of Hampton Roads, 20 miles due west from Cape Henry. The depth of the water off piers is 60 feet. There are ten miles of water front, and good anchorage. The port is served by 18 regular steamship lines. The total tonnage for 1905 was 4,717,858 tons‡ valued at \$89,816,686. About three-fourths of the total tonnage consisted of coal and coke. It is the seaboard terminus of the Chesapeake and Ohio Railroad, which intersects more intra-State lines than any other road operating in the State, and about three-fourths of its traffic is supplied by the connecting lines. The most important classes of coast-bound traffic originating in Virginia are: Grain, live-stock, lumber, tobacco, and garden products. Newport News is an important distributing centre for merchandise, furniture, farming implements, and machinery, which go to all parts of the State north of the James River, and a small part is diverted to the connecting lines from the South.

*Lynchburg*.§—As an inland railroad centre Lynchburg ranks next to Richmond in importance. Although Lynchburg is now entirely an inland town, its early importance as a trade centre was fixed by the James River Canal, which was the most important transportation route from the seaboard to the interior part of the State, until the construction of the Norfolk and Western Railroad. Lynchburg was the handling station of all goods destined for south-west Virginia, western North Carolina, and the northern part of the east Tennessee

\* 822,930 bales of cotton shipped from Norfolk in 1905, valued at \$40,000,000.

† Population, 28,749, in 1906.

‡ Tonnage in 1902, 2,663,669 tons.

§ Population 20,000 + in 1906.

country. The old Lynchburg-Knoxville pike was constructed for the convenience of this traffic. The James River ceased to be navigable above Richmond when it became unprofitable to operate the canal, after which time Lynchburg's importance was due to the trade stimulus as fixed by the old transportation régime, and the later railroad facilities. In total manufactures and the jobbing trade it ranks next to Norfolk. The 1906 factory output was valued at \$15,000,000. The important manufactures are: Shoes, foundry products, tanning extracts, cotton goods, flour, and farming implements. In the manufacture of shoes it ranks first among the cities of the South. The products are sold throughout Piedmont, and the western part of the State. Lynchburg is the largest shoe-distributing point in the South, and its shoes are sold, not only in all parts of Virginia, but throughout the South Atlantic States.

*Roanoke*\* may be justly termed a railroad town, as its size and trade have been largely produced by the Norfolk and Western Railroad, of which it is headquarters. The company employs 4,700 operatives, who have their homes in the city. It is situated on the main line (Bristol-Norfolk) of the Norfolk and Western railway, and is the southern terminus of the Shenandoah Valley and the northern terminus of the Roanoke and Southern railroads, both of which are owned and operated by the Norfolk and Western. The geographic location and railway service, therefore, make it the eastern gateway into south-west Virginia, and the southern gateway into the Valley. The jobbing and retail trade have steadily increased, and manufacturing enterprises have begun to be extensively developed. Roanoke will be a division terminus for the trans-State Tidewater railroad, which, added to its present prosperous trade relations, bids fair to make it the largest and most important exclusively inland city of Virginia. The most important outgoing shipments are: Groceries, iron products, general merchandise, and alcoholic drinks; and the most important incoming shipments are lumber, grain, vegetables, and tobacco.

*Bristol*† is located on the Virginia-Tennessee boundary, and, as the terminus of five different railroads, is an important rehandling station and distributing centre. It is southern Appalachia's most direct gateway to the south and east, and is, therefore, an important trade centre for that region, and the southernmost portion of the Great Valley.

Three of the railroads operating from the city as a base have their

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\* Population 30,000 in 1905.

† Population 15,000 in 1905.

General Offices there. It is also the headquarters of the Virginia Iron, Coal and Coke Company, with a capital of more than \$10,000,000. The most important manufactures are: Iron, lumber products, paper, tanning extract, tobacco, flour, and chemicals.

The value of the manufactures and trade has been more than doubled in the last decade. The manufactures of 1906 are valued at \$10,500,000; exclusive of lumber, coal, and iron products, valued at \$10,000,000. The jobbing trade aggregated \$9,000,000, which shows Bristol's importance as a distributing point.

*Danville\** is at the crossing of the Southern and the Danville and Western railroads. It is the largest loose-leaf tobacco market in the world, handling from 45,000,000 to 55,000,000 pounds annually. Tobacco is the principal farm product of the region, and the most important article in trade. The city is situated on the Dan River, which has sufficient volume and favourable fall for the establishment of large factory enterprises. Already two cotton mills have been established, with a combined capital stock of \$4,500,000, which furnish employment to more than 4,000 wage-earners.

#### INTER-STATE COMMERCE.

Though Virginia is making marked progress in the development of manufacturing enterprises, these have not reached such proportions as to make the State an important purchaser of raw materials. The rapid development of cotton factories creates an increasing demand for raw cotton. In 1900 there were only 7 factories within the State; while in 1905 there were 32, which consumed 57,223 bales, an excess of 39,049 bales over the total production of the State. The most important shipments, therefore, from other States for domestic use consist of manufactured products. There are large shipments from other States into Virginia, destined for eastern and foreign markets, which require rehandling; and for these due allowance must be made in the consideration of the aggregate port trade, since no separate record is kept at the ports of the traffic originating within the State, and without the State. This rehandled traffic creates a large demand for labour, sorting, transfer, and shipping facilities, and in that way becomes an important factor in the State's traffic and trade. The products consist chiefly of lumber, cotton, and tobacco from North Carolina; lumber and live-stock from Tennessee; and lumber, coal, and coke from West Virginia.

Virginia produces a large surplus of raw and manufactured

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\* Population in 1900, 16,520.



tobacco, garden products, forest products, coal and coke, live-stock, and peanuts; and a small surplus of fruits, poultry products, leather, meats, and iron. These constitute the bulk of the outgoing tonnage, the major portions of which are sold in the North Atlantic and New England States. The most important markets are: New York, Philadelphia, Boston, Baltimore, and Washington. Large shipments of live-stock are made to Lancaster, Pennsylvania, from which point they are sold to the farmers of Pennsylvania for winter fattening.

The inter-State shipments of live-stock, tobacco, cotton, and vegetables are largely by rail. More than three-fourths of the seaboard lumber traffic, and more than one-half of the seaboard coal shipments, are by water. Cotton is shipped almost exclusively by water. The coastwise trade centres in Norfolk, Newport News, and Richmond.

#### FOREIGN COMMERCE.

The total imports into the State for 1905 were valued at \$10,885,628, and the exports at \$23,409,119. The imports were largely general merchandise, and the exports coal, live-stock, grain, flour, cotton, tobacco, lumber, and meats.\*

*Newport News.*—The total exports† from this port for 1906 were valued at \$18,693,803, which is an increase of 18 per cent over 1905.‡ The following are the important classes, in the order of valuation: Flour, \$3,095,649; lumber, \$1,454,096; lard, \$1,231,201; copper, ingots, &c., \$1,100,623; tobacco, \$1,038,483; coal, \$925,275; linseed oil cake meal, \$869,632; cotton, \$506,056. The imports aggregated \$2,723,788, an increase of 26 per cent. over 1905.§ The following are the most important, in the order of valuation: Burlap, \$376,388; jute bags, \$336,025; plate-glass, \$265,546; alcoholic drinks, \$231,903; earthenware, \$165,403; and cocoanut oil, \$142,728.

*Norfolk and Portsmouth.*||—The following are the important exports from this port, in the order of valuation:¶ Lard, \$1,180,441; coal, \$1,111,725; lumber, \$1,000,000; cotton, \$943,031; grain and flour, \$780,487; tobacco, \$329,729; and cattle, \$305,300. The total exports were valued at \$7,640,800 for the year ending December, 1905, as compared with \$8,256,519, the total imports for the same year, which consisted of merchandise, chemicals, alcoholic drinks,

\* The coastwise trade for the same year was about twelve times the total foreign trade.

† Newport Custom House Report, 1906.

‡ Exports in 1905, \$15,750,310.

§ Imports in 1905, \$2,154,650.

|| In the same Custom House district.

¶ 1905.

burlap, etc. Norfolk is the ocean terminus of the Tidewater railroad, which crosses the State from east to west. Its construction is for the purpose of marketing the coal from one of West Virginia's richest fields. The grading in the Virginia portion is nearing completion, and the contracts demand that the road be ready for traffic by January 1908. It will probably be the heaviest coal carrier in the State, and will increase the coastwise and foreign traffic out of Norfolk at least 25 per cent.

It is generally believed that the Tidewater will finally be extended to the intersection with the Wabash railroad, and be consolidated with that system, in which event it would become one of the most important trunk lines.

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#### ECONOMIC GEOGRAPHY AND ITS RELATION TO ECONOMIC THEORY AND HIGHER EDUCATION.

BY

J. RUSSELL SMITH.

Five years ago Stanley Hall, adopting a figure from European politics, called Geography the sick man of the curriculum. The charge is well founded, for it certainly has lagged behind other important subjects in being rationalized and receiving due recognition of its importance. In this latter respect it has not yet come into its inheritance. It has but lately emerged from the period in which its study consisted in the deadly exercises of memorizing in a blind way lists of cities, rivers, capes, and boundaries, and the acquisition of unexplained facts concerning the distribution of various classes of things.

The theory of evolution has paved the way for modern geography, which has had to await the development, spread, and general acceptance of the revolutionizing truths commonly associated with the name of Darwin. Organisms have been found to be capable of influence by their surroundings. Life is progressive because the organism responds to its environment and the environment changes. Here is a vast field for study. This environment, and its component elements, the resulting organic responses, constitute the field in which geography has worked. The field has by no means been

covered, but in some directions the publications of geographers indicate that they have reached or passed its boundaries.

In both America and Europe considerable attention has been given to each of the two great divisions of the field—the earth, as shown by the study of physiography, and life, as shown by the work done in biography and anthropogeography. But the curricula of higher institutions of learning show that Europe is far ahead of us in the appreciation of geography, broadly considered. Certainly the European university student exceeds the American in his interest in courses dealing with such subjects as “snow, ice and glaciers,” “oceanography” and biogeography, the last dealing alternately with the zones of distribution of plants and animals and giving equal emphasis to the Kerguelen cabbage, the Antarctic penguin, the Atlantic protozoa, and the peculiar way in which certain species of plants are distributed among the European valleys through which they have migrated from various avenues of entrance. These and many other phases of geographical study have all the commanding interest that arouses the enthusiasm of a devotee, and holds him as the astronomer, the philologist, or the mathematician is held, but for the great mass of humanity the geography that is to be of interest will have primarily the human interest, and a value more directly detectable than that resulting from the study of the distribution of certain varieties of toads.

Anthropogeography—the geography of man—is a wide field, and if taken up systematically it might be necessary to give, theoretically at least, as large a part of the field to the savage as to the civilized man. Indeed, we possibly find a greater variety of conditions of life among the savage than among the civilized peoples. But Economic Geography partakes of the definition of Economics, and it comprises those geographic influences that affect the economic status of man. This shifts the emphasis from the savage to the civilized, because the latter has, in the greater complexities of his economic status, the results of the same geographic influences as the savage, and also ten or twenty times more geographic influences than has his primitive brother. The emphasis is still further placed upon civilized rather than savage man, because we, the students, are continually thinking of the lands of the savage in the terms of the civilization which will probably soon come to them. We have small interest in the savage or his mode of life except to make him a matter of record and then civilize or replace him. Economic geography, therefore, neglects the savage, and devotes itself to the study of the physical environment of civilization.

We have received from nineteenth-century biology the sweeping truth that organisms are what their environment has made them. We believe this to be true in the case of monkeys, fish, and forest trees, but just how much it means for man, for races, and for civilization we have only begun to realize. If it be true that details of our physical make-up, our personal qualities, racial qualities, our industries, and, through them, our social and political conditions and institutions, are all profoundly shaped by our physical environment, it would appear to be one of the plainest of things that all processes of education should give great attention to the study of the economic environment in all its phases. We are not yet doing so, but there is rapid progress in that direction.

This is evidenced by the quick succession of new text-books of geography and by the changing concept of the philosophy of history. The attitude toward history is important, for that which is essential to the understanding of the past is also necessary to the understanding of the present. It is not long since the ordinary history was little more than a chronicle of military events, of edicts and great legislative acts, of accessions, elections, and dates. There was little explanation of the forces of which the chronicled acts were but symptoms, if perchance they were under any circumstances more worthy of general attention than is an account of a murder in the pages of our daily papers. Within a short period we have seen history explained in a variety of terms. Some have shown that it depended almost entirely upon the amount of religious freedom and resulting freedom of thought; others that it depended upon forms of government and the resulting personal freedom. Other explanations have also been given, and the past third of a century has witnessed a growing recognition of the fact that the physical environment, the economic environment, or the economic geography of the region occupied by the people in question, and even that of other regions, has been one of the most profound influences in the making of history. The Fourth of July orator will not be so universally believed in the future as in the past when he shows that nearly everything that is desirable in the universe is due to the amazing collection of *qualities* possessed by the American people. What about the land possessed by this people? This calls to mind a question put by a student of philosophy at one of the fortnightly meetings held by the fifty odd American students in Leipzig a few years ago. Some economic topic was being presented, and when the discussion was opened to the group, the man above mentioned asked, "Is it not true that the resources of the United States have had a great deal to

do with the greatness of the country?" That a mature student, a graduate of an American college, should have asked that question in good faith—and he did—is a condemnation of our educational system. Even a philologist should know something about the country in which he lives as a place in which to live. For giving this acquaintance with our country there is in our schools no general provision above the geography of the grammar grades. The colleges have no geographic requirements for entrance, and, therefore, the private preparatory schools of high-school grade usually let the subject entirely alone. The public high schools often have in the first year a course in physical geography; and of late some of these schools, particularly those claiming the special character of commercial schools, have added a course in commercial geography. More should be done. We should know our country as it is and as it probably will be, as well as its history, which aims to tell what it was.

Economic geography is the description and interpretation of lands in terms of their usefulness to humanity. Its net result is the understanding of the relationship between the people of a district and their physical environment, just as the manager of a great steel company understands the relation of a blast furnace to the rest of his organization, or as a physician understands the relation of the lungs or stomach to the general health of the human body. This involves a large amount of concrete economic information. Anything affecting the economic status through the environment, or the environment through the people, has a place. The field is wider than that taken by the writers of commercial geographies. The personal equipment for the economic geographer is the ability to detect and understand factors that produce an economic effect and to discern an approximate measure of that effect. When we consider the dependence of social sciences, of industry, and of human welfare upon the proper understanding of the land in which we live, it seems surprising that this study has not already reached greater prominence in our educational systems. This surprise is all the greater because of the pedagogical advantages offered by a study of economic geography. Students are put to study foreign languages and geometry for the resulting mental discipline. Yet economic geography dips continuously into the natural sciences, and is an unending series of causes and effects whose comprehension involves the best kind of mental discipline and horizon-broadening along with the acquisition of knowledge of prime usefulness.

For the graduate student, also, it has advantages. It would be difficult to find better practice in sifting and using material than the

student gets in making a study of economic geography of a selected region. To begin with, much of the material is in widely-scattered and obscure sources. Much that appears to be material is not; and this fact must be detected by sane judgment, the application of known principles, and comparison of authorities. The economic geographer has much chaff, but some wheat, to find in the writings of men whose prime interests are diverse—rhetoric, politics, strategy, big game, local pride, or an attempt to interest the general public and make a book that will sell. If to any of these be added the fact that the writer may be almost entirely devoid of any economic instinct, the result may at times be almost ludicrous. As an example of this is a recent handbook of the Argentine Republic. It purported to be a description of that country from the industrial standpoint; yet in a country which, like Texas, has moisture conditions varying from tangled swamps to cactus deserts there was no mention made of any inadequacy of the water supply for purposes of agriculture. Yet there is in that country an area twice as large as Germany too arid for the farmer. The student working in such fragmentary, contradictory, and inadequate material has opportunity to speedily lose undue reverence for print and the teacher has opportunity to aid the student in learning to separate truth from trash.

Any science must in its presentation have some basis for systematic arrangement. A course of lectures by a German geographer of note, dealing with snow, ice, and glaciers, gave equal emphasis to the snows of the top of Aconcagua, of Grinnell Land, of the high Alps, and of the plains of Saxony. This was done because snow was interesting because it was snow. It was being studied for its own sake. Economic geography deals with those phenomena having influence upon the economic status of man and the consequent economic responses. If snow claimed a place here it would be through its influence upon winter wheat and other vegetation, upon water supply and floods, upon lumbering in the northern forests, upon transportation by sledge, upon the housing or pasturing of cattle by winter, etc. The snows of Aconcagua and the high Alps would be passed by unless it were shown that they became of use to man, as by slow melting they might release water for power and for irrigation, and thus become the industrial lifeblood of human communities in the valleys below.

A satisfactory understanding of the economic conditions of any region involves a wide understanding of human activity of an industrial character and the ability to recognize resources. Industry is a result of geographic conditions—a kind of geographic index. Re-



source and industry go hand in hand; yet it is necessary to be able to appreciate them separately. A resource is something which may under possible conditions be made into a utility. The first thing the economic geographer desires to know about any region, even an uninhabited isle, is, what are its resources? Second, what are the means under which the resources can be converted into utilities? Third, what is the likelihood of the changes coming to pass?

We can only recognize resources by knowing how and under what conditions industry may use them. The progress of invention is constantly giving new processes, which produce new industrial possibilities and make resources where before there was, in an economic sense, but a desert waste. The application of the basic process to American steel-making enabled us to use the phosphatic ores of Michigan and converted the barren shores of Lake Superior into the world's greatest ore region. The discovery of some similar process for reducing titaniferous ores may shift the industry to the province of Ontario, if reports of titaniferous ore deposits there are well founded. The application of American agricultural methods to rice-growing may make this country the greatest rice exporter. The economic results coming from the use of a successful cotton-picking machine are difficult to anticipate. The cotton gin is apparently the economic key to the political history of the United States from 1820-1870.

In this connection the bearing of technical possibility is often much overstated, and lands are spoken of as having possibilities which could only be realized by the introduction of devices and practices which mature thought will show us must be foreign to the people of the land in question for decades to come.

Another phase of any estimate of resources and the industries that may arise from them is the influence of industries elsewhere. Alaska has—so it is claimed—agricultural possibilities quite as good as Finland, an agricultural country with several million inhabitants; but Alaska will not be utilized to any large extent while the American people have cheap, unused land in the United States. We have on our Atlantic and Gulf shores much more swamp and marsh land than Holland has reclaimed; and it will be more productive because of our warmer climate. But this resource, like Alaska, will remain idle so long as good land in Virginia and the South continues to have its present almost nominal value.

A knowledge of resource and of industry must be reinforced by some knowledge of the industrial qualities and equipment of peoples. They vary greatly. How do they vary and how has it come about? Why is it that the eloquent, intelligent, and lordly Indian could not

be made to work either by Spanish master or English conqueror, and has as a consequence retreated before the white man's advance like the wild animals of the forest, while the less lordly and, probably, less intelligent negro labours, bears burdens, and survives in our midst? I shall not discuss here the probable origin of the work quality in races, but it is probable that this trait of the white and yellow man comes as slowly as civilization itself; and being essential to any economic advance, it is practically the basis of and coincident with civilization. Yet, entirely overlooking this quality, millions of Americans enthusiastically voted for a policy of extending to another race, the Filipinos, the blessings of American liberty and civilization, and they expected these blessings to be fitted on in a few years, like styles in clothing upon the person, or sewers, trolleys, and telephones upon their towns. The American voter is beginning to realize that the Filipino changes slowly and the economist and economic geographer must consider well the qualities of peoples as well as the qualities of land and climate and the possibilities from technical improvements. This human factor was rather harshly recognized by an eminent American engineer, who, in reference to a comparison of the number of the population in one of our Western States with that of one of the independent nations of the world, said, "But how many of those people does it take to make one American?"

In gauging the usefulness of lands there is always a very considerable amount of knowledge that can be quickly inferred by one possessed of a knowledge of some of the factors in economic geography. Geographic and climatic types are often world-wide in their application. If we recognize the type we instantly know a number of resulting conditions. There is a certain amount of uniformity about flood-plains and deltas, plateaux, and mountains. Certain soils bar certain products. Rainfall, by the mere statement of its amount, may half describe a country. Below a slightly varying minimum there can be no general tilling of the soil and no forest, only pasture. Beyond sixty inches per year the successful growing of Temperate-Zone grain is difficult, because of too much rain; but both grass and forest grow with great profusion. The seasonal distribution of rainfall is, by its mere mention, as descriptive as its amount. A region with a winter maximum and a dry summer like southern California and Italy differs profoundly in its economic activities from a region of abundant summer rain like Louisiana and South China. A single statement may sometimes be as descriptive as a chapter. A student was recently reporting on the resources of a certain district and in the same paragraph mentioned good agricultural lands

and salt as furnished by a lake. A salt lake implies an inland drainage basin, which implies excess of evaporation over rainfall, and a resulting aridity which rarely, if ever, permits agriculture without irrigation. A proper appreciation of the significance of the salt lake would have shown the student that his statement about agriculture could not be founded in fact if his salt statement were correct.

A knowledge of the concepts and facts involved in economic geography is essential to a satisfactory grasp of many questions in Political and Social Science. The progress of law is in part but a record of attempts at solving problems growing out of geographic and industrial situations. A good example of this is the recent discovery of our lack of any suitable irrigation law, and the many perplexing situations that have resulted from the rapid attempts to adapt agriculture and then law to geographical conditions strange to our race. The political scientist—and we need one—who will enlighten us upon irrigation law must be as familiar with agricultural processes in our trans-Missouri region as is the orange-grower of California or the alfalfa-grower of Colorado, and he needs a much wider knowledge of the economic geography of the region.

Political economy, or economics, deals much with psychology and abstract thought, but also with the material world, and therein it also depends largely upon a background of economic geography. A recent successful text-book on Economics says it is a "study of men earning a living" or "the study of the material world," etc. "The science of wealth" is a brief definition that was much used in my college days. A very successful recent book states that economics "considers all of the circumstances which affect the production and distribution," etc., of wealth, and the book then unfolds a two and one-half page description of the United States of America, and nineteen paragraphs are devoted to a sketch of the development of our industries. All of the above-mentioned difficulties involve the idea that the student should begin the study of economics with a knowledge of the world in which we live and make our living—that he should have some mastery of the contents of economic geography as indicated in this paper. The present science of economics may give students an appreciation of the economic aspects of many human devices, practices, and institutions, but it largely takes for granted, and leaves untaught, the ability to appreciate the remaining part of the field—namely, the economic aspects of the environment in which we live and think. As yet this important preparation is, with the exception of grammar-school geography, commonly left to the chance information picked up by a student whose powers of observation in

this field have rarely been trained. Without the preparation of economic geography, the courses in economics are, to a considerable extent, shafts without pedestals, and much of the good result may be missed because the student lacks the concrete economic facts with which to clothe the skeletons of theory. I submit, therefore, to the economists that they would do well to see that their students are equipped with the concrete information coming from economic geography before taking up the more abstract social sciences.

Economic geography is also of use to the publicist and the citizen. If Joseph Chamberlain, of Birmingham, had known South Africa as Theodore Roosevelt knows the West, the Boer war would have been different, if by some wonder it had come to pass at all. If a few men at Washington in 1898 and '99 had known more about the economic geography of the Philippines, that chapter in our history would probably have been brighter. If one-half of the thousand leading men in the South from 1850-60 had been familiar with the economic geography of the Northern states, the majority would probably have sided with Robert E. Lee and been opposed to secession and war. Our acquisition of Louisiana and Oregon was due to the foresight of Jefferson and Whitney—geographers who appreciated the value of these unused lands, and succeeded in adding them to this country practically without cost to the nation, but at considerable cost to themselves. In a thousand ways the questions that must be settled by those who decide the foreign and domestic policy of nations and the policy of states and cities are at root questions of, or questions involving, economic geography.

This study is also of great personal and practical use to the citizen, and on that ground alone is deserving of a higher place in education. This continent is still essentially undeveloped. Industries are being established and rapidly readjusted. Emigration is still common. Men of all callings are constantly seeking new homes. How shall they be guided in this quest but by a knowledge of the resources and industries, but above all by the industrial possibilities, of the region to which they go? If a capable young lawyer or physician locates in a Western town that grows into a city, his success is almost assured. If he locates in a town without a future, he shares the fate of the town. Thousands of examples of this have occurred, and sometimes on a large scale. A casually-mentioned disaster almost or quite rivalling the destruction of San Francisco occurred between 1888 and 1896 between the 100th and 105th meridian and between Canada and Indian Territory. It occurred gradually, and its losses and victims fell one by one, and there was no national outcry, but the

disaster was none the less great. Thousands upon thousands of American families, seeking to build up farm homes and ignorant of the economic geography of the region into which they were moving, went beyond the rainfall bounds of agriculture and settled on land that was too arid to support industry of that kind. As is the case in such transition lands, good years come with the bad; but the bad predominated, until, pushed by threatening starvation, the settlers emigrated after years of toil, much poorer than they came. It is said that a quarter of a million people were thus forced out of western Kansas alone. There is scarcely an adult in the investing class in the Eastern states who does not know persons who lost by this Kansas hegira through having loaned money to aid in the development of the Kansas prairie. As the Mississippi valley farm line had gone westward, the farm mortgages had for years been good investments; and in the absence of accurate geographical knowledge or of its dissemination, the Eastern investor knew no reason why farms should stop at 100° west until the lesson was taught by the loss of millions.

On these same prairies, some hundreds of miles north, James J. Hill, an economic geographer of high rank, saw the possibility of homes, and he threw railways across the bleak, bare plain in spite of the cries of folly. The success of the venture has made him a multimillionaire.

Investment everywhere follows, if wisely done, the teachings of economic geography. Where shall a great plant be located? Many factors are involved in that question. An example will illustrate. The Lackawanna Steel Company with a plant at Scranton found the plant in need of remodelling and enlarging. It was also found that Scranton, in the high-priced anthracite coal field, was no longer a good place for a great plant. A careful survey was made of the ore, coal, coke, water-power, limestone, transport, and labour questions in the United States, and of the market. As a result of this piece of applied geography, the mighty machines of the new Lackawanna plant now thunder beside the lake at South Buffalo; and it is declared that Pittsburg is outdone by 63 cents per ton on iron cost.

We have entered upon the period when investments must often be made in distant parts of the country, and we have also begun to seek foreign investments. Herein lies the explanation of the recent statement by a prominent New York financier, that economic geography is one of the most important things in the preparation of the banker for his career.

## RAILROADS IN THE CONGO FREE STATE.

An article in *Le Mouvement Géographique* (No. 5, 1907) describes the railroad that is being built between the Portuguese port of Lobito Bay and the great copper and gold mining region in Katanga, the southeastern province of the Congo Free State. The map here reproduced is from one published in that article to show the development of railroads now in progress in the Congo State.

The copper-mining region of Katanga is believed to be one of the richest in the world. Development there has scarcely begun, because the region, as yet, has no means of comparatively cheap communication with the coasts. Two railroad enterprises are now pushing forward as rapidly as possible to connect the Katanga copper fields with the Atlantic.

One of these roads is to connect the bay of Lobito, north of the large town of Benguela on the Atlantic, with Katanga. The Katanga Company, a Belgian-British concern of which Mr. Robert Williams is the director, is building the road. It was at first intended to make Benguela the Atlantic terminal, but it was found that Lobito Bay offered much finer harbour facilities, being naturally protected from the sea, while at Benguela the erection of costly breakwaters would be necessary. The largest vessels, even at low tide, will be able to load and unload at the docks to be built in Lobito Bay.

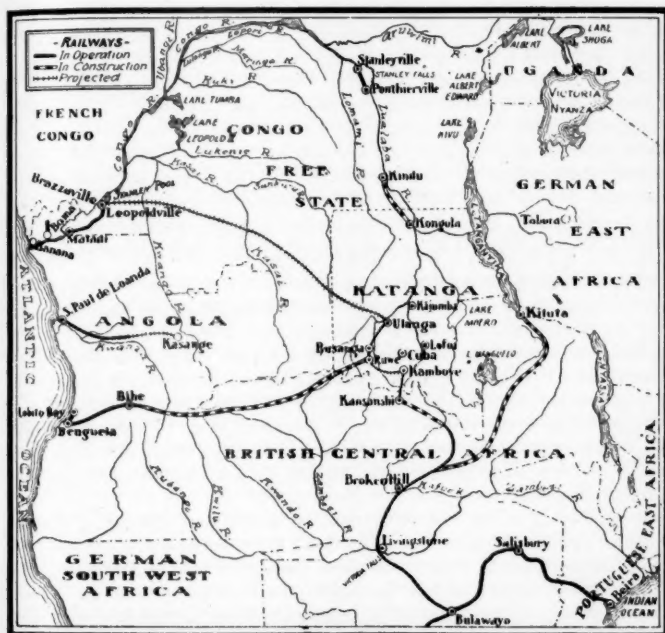
The entire route, which is over 900 miles long, has been surveyed. The most difficult part of the railroad, from the coastal plain up through the mountains to the inner plateau, has been completed, and trains are in operation to a point some distance beyond Bihe. Across the plateau to Katanga the line will follow, in the main, the water-parting between the Congo and the Zambezi systems. The work, which is in the hands of Messrs. Griffiths & Company of London, has been in progress about two years. In crossing the coast ranges, the track was carried to a height of nearly 5,000 feet above the sea.

Meanwhile, the Congo Free State is carrying on the large enterprise of joining Katanga with the Atlantic by a series of connecting steam land and water routes. The map shows the lower Congo navigable by large ocean steamers to Matadi; the railroad connecting Matadi with Leopoldville about 335 miles long; the Congo navigable for steamers between Leopoldville and Stanleyville, about 900 miles; the railroad now in operation from Stanleyville to Ponthier-



ville, 75 miles; the navigable stretch of the Lualaba from Ponthier-ville to Kindu, 195 miles, on which steamers are now plying; the railroad now building from Kindu to Kongola, 276 miles; and the river from Kongola to the head of navigation on the Lualaba, in southern Katanga, about 300 miles. The total length of continuous steam communication along the Congo, when this enterprise is completed, will be 2,471 miles, of which 1,485 miles will be by water and 986 miles by railroad.

Another railroad project for which a concession has been granted is the extension of a road from Leopoldville across the Kasai River to the mining regions in southern Katanga. This enterprise is not



yet under way. The length of the proposed line is about 1,250 miles, and the route passes through some of the richest rubber and agricultural regions of the State.

The map also shows the extension of the Cape to Cairo railroad that is now being built to Kansanshi, on the southern edge of the Katanga mining fields. When this road is extended to Ruwe, as is proposed, Africa will have a trans-continental rail route between Lobito Bay on the Atlantic and Beira on the Indian Ocean.

## GEOGRAPHICAL RECORD.

### AFRICA.

ITALIANS IN ERITREA.—The *Bollettino dell' Emigrazione* (No. 16, 1906) prints the conclusions reached by the Commission sent to the African colony of Eritrea by the Co-operative Society of Ravenna to study the question whether this part of East Africa is adapted for Italian colonisation. The Commission reports that below 1,800 meters the climate is not suitable for white labourers; that above 2,000 meters the climate is too cold for the industrial plants; but between these altitudes the conditions are as salubrious and as suitable for agriculture as any in Italy. It is found, however, that though this land is abundant, it is already occupied by the aborigines, who farm it in a very wasteful manner, removing to new fields when they have exhausted the land they are cultivating. The Commission suggests that the Italian Government should insist upon the natives learning proper methods of cultivating the soil and that the free Government lands should be allotted to white settlers to cultivate and restore to its proper condition. Settlers are advised to turn their attention to such industrial plants as tobacco, sisal hemp, upland cotton, and other textile plants. Careful experiments are being carried out on the plateau at Asmara and elsewhere with these and other plants.

NORTH-EASTERN RHODESIA.—Mr. L. A. Wallace, Chief Surveyor to the British South Africa Company in North-Eastern Rhodesia, contributed to the April number of the *Geographical Journal* a valuable paper on that region. At present there are over 5,000 miles of astronomically-surveyed routes. He has a high opinion of the economic value of the country. Its rich cotton soil is probably its best recommendation. This soil is said to be ideal for cotton, and samples of native cotton have been valued in England at from 14 to 16 cents per pound. There are also extensive forests of useful timber and rich mines of copper, lead, and zinc. A very large area of good farming land is distributed through the whole of the highlands.

The eastern half of the country is formed of granite and schists, and running through the middle of this area from northeast to southwest is the deep, narrow valley of Luangaa, at the head of which, in the highest land in the country, are the Mount Waller sandstones and coal measures of Permian age. In the western half of the region are seen, first, in the high land to the northwest, a large area covered by Tanganyika sandstone in places up to 3,000 feet thick, without coal or lime. Next, in the southeast, is an area of crystalline limestones, much folded, and isolated from the rocks on the east by fifty miles of granite.

AN INDEX RELATING TO NORTH AFRICA.—The *Bulletin* of the Geographical Society of Algiers (1906, No. 3) is wholly given to an index of its contents for the years from July, 1896, to Dec. 31, 1905. The material is arranged under names of authors, places, and topics. As the periodical is especially devoted to North Africa and the Sahara, the index will be helpful in consulting much recent literature relating to that part of the continent.

## AMERICA.

THE TOPOGRAPHIC ATLAS.—The topographic map of the United States will be advanced this season by work in 31 States and 4 Territories. All the parties are now in the field. Two topographic parties are engaged in Alaska making detailed maps of the Fairbanks mining district on the middle Tanana River, and of the Kasaan peninsula on Prince of Wales Island in southeastern Alaska, on a scale of a mile to the inch. The region lying between the international boundary west of Dawson and Fairbanks, adjoining the southern boundary of an area already mapped, will be surveyed on a scale of one half inch to a mile. All plans for the season's work in the various States and Territories have been formed, excepting in New York and Pennsylvania, which are still under consideration.

POPULATION OF THE UNITED STATES.—*Bulletin 71* of the Bureau of the Census gives estimates of the population of the United States for 1904, 1905, and 1906. The estimated population of the country in 1906 was 84,216,433, of whom 83,941,510 lived in the continental United States. In 1906, the number of inhabitants per square mile in the continental United States was 28, varying from 1 in Arizona and Wyoming to 460 in Rhode Island. Less than one person per square mile lives in Nevada. If the density of population in all the States were as great as it is in Rhode Island, the total population of the United States would approximately equal the entire population of the world. The estimated population of the United States and outlying territory in 1906 was 93,182,240.

SUB-IRRIGATION.—The growth of population has at length compelled America to follow the example of the hoary nations of the East in the matter of irrigation. Within a score of years it is probable that practically all of the land available for irrigation under the present system will have been utilized. The demand for new farm-land, however, is likely to be as strong as ever. It will be stronger, indeed, if, as many people think, we are destined to have a population of 200 million by 1950 and of 300 million by 2000 A. D. Hence any plan which will make it possible to avoid the enormous waste of water involved in our present system of irrigation is worthy of careful consideration. In the arid southwest we have millions of acres of almost level land which could be transformed from a desert into a garden if, in the first place, there were sufficient water, and if, in the second place, the cost of raising it to the necessary level were not so enormous. Measurements show that in ordinary irrigation projects more than half the water is lost by evaporation and seepage between the heads of the main canals and the point of final distribution to the fields. A far more serious loss, estimated at from five to twenty-five times as great, is involved in the enormous evaporation from the fields where the water is ultimately spread out upon the surface under the rays of a hot sun. Manifestly, if these two sources of loss could be removed, the present supply of water would be sufficient for from five to fifty times as much land as it now is; and the cost per acre of raising it by mechanical means to the elevation of the land now lying waste would be proportionally less. To put it mildly, it would be possible to double or treble the amount of land redeemable from the desert.

W. B. Rice, writing in the *Irrigation Age* for April, believes that sub-irrigation presents a practicable means of preventing the present deplorable loss of water. The method has been used in a few places where intensive cultivation is practised, but has been deemed impracticable on a large scale because of the great expense

involved, and because of the difficulties due to the accumulation of sediment in the underground conduits. In view, however, of the fact that ordinary irrigated land is worth \$100 an acre, and the best land several times as much, Mr. Rice believes that the expense of sub-irrigation is not prohibitive. In the ideal scheme the water must first be freed from sediment in settling basins.

It is then led into a system of tile pipes—say two inches in diameter and six feet apart—underlying each field at a convenient depth. The water percolates out between the short, loosely-joined tiles and saturates the fields. The surface, however, remains dry, and evaporation except through growing vegetation is largely prevented by an inch or two of dusty soil on top. Water can stand in the tiles till the required degree of saturation is obtained. Being enclosed in pipes it can flow up and down over gentle irregularities, and the cost of levelling up the fields is avoided. Weeds have a poor chance to grow, because the seeds of most of them fall into the dry surface-layer of soil and cannot sprout. Thus the expense of keeping them down is lessened. Moreover, the deterioration which at present arises from the saline deposits consequent on extensive evaporation is almost avoided. Thus, again, the value of sub-irrigated land becomes greater than that of ordinary irrigated land. The original cost of tiling an acre for sub-irrigation amounts to about \$60, according to Rice's estimate. It is quite possible that this is too small. Nevertheless, even if the cost is much more than \$60, sub-irrigation is likely ere long to become practicable. A plan which holds out a reasonable possibility of adding millions of acres to the habitable area of the earth cannot be dismissed merely because it presents difficulties. E. H.

**REPORT ON LEAD AND ZINC.**—Vol. VIII of the Publications of the University Geological Survey of Kansas is a special report on lead and zinc prepared by Prof. E. Haworth, State Geologist, Drs. Crane and Rogers, and volunteer assistants. The book, of nearly 550 pp., is divided into three parts, of which the first, by Dr. Haworth, treats of lead and zinc ores in their history, distribution, compounds, geology, and theories of ore formation. The second part, by Dr. Crane, is devoted to methods of prospecting, mining, and milling in the Kansas lead and zinc district, to descriptions of machinery, and to suggestions and information relating to the industry. The third part is a description by Dr. Rogers of the minerals of the Galena-Joplin lead and zinc district. The State line is disregarded, as these parts of southeastern Kansas and southwestern Missouri constitute a distinct mineralogical province, so that the discussion of their minerals includes the district as a whole. Dr. Rogers deals largely with crystallography, as this part of the subject has been most neglected. Most of the drawings are his own. The volume is illustrated with photographs of ores, machinery, landscapes, mining plants, a few maps, and many figures in text.

**SURFACE WATERS IN MINNESOTA.**—The general characteristics of Minnesota's streams and lakes and the various factors that modify the quality of the drainage are discussed by R. B. Dole and F. F. Westbrook in Water Supply and Irrigation Paper No. 193. The results of nearly two-years' field and laboratory work by the U. S. Geological Survey and the Minnesota State Board of Health are included. The discussions embrace the general features that influence the quality of the water, each drainage area considered in detail, and the results of chemical analyses and bacteriological examinations. Minnesota contains the head-waters of three great drainage systems. About one-tenth of her area is tributary to Lake Superior, three-tenths to Hudson Bay, and six-tenths to the

Mississippi system. The State contains probably a larger number of lakes than any other State in the Union. The latest authority gives 3,824 square miles as the area covered by water.

**FIFTH REPORT OF THE RECLAMATION SERVICE.**—This report relates particularly to operations during the fiscal year ending June 30, 1906. In view of the demand for facts concerning the character and cost of the works, considerable data, more or less technical, desired by engineers and others are included. Among the projects reported upon are: The irrigation of 200,000 acres in the Salt River Valley, Arizona; work in the Sacramento Valley, where the area adapted for irrigation exceeds 2,000,000 acres; that near Yuma in California-Arizona, where the Colorado will be diverted into two irrigation channels, one on each side of the river; that in Uncompahgre Valley, Colorado, where about 60,000 acres of fruit lands and 80,000 acres of general farming lands will be irrigated; the Minidoka project for the reclamation of 150,000 acres in the Central Snake River Valley, Idaho; the Payette-Boise project, Idaho, where 272,000 acres in those valleys are to be reclaimed; and the Shoshone project, which provides for the irrigation of a large area near Cody, Wyoming. The reports are illustrated by many photographs, maps, and profiles.

**AGRICULTURE IN THE PEACE RIVER COUNTRY.**—The farming activities of the Canadian Plains are extending every year a little further to the north. In 1902 there was an increasing request for reliable information as to the Peace River country. Dr. Robert Bell, then in charge of the Geological Survey of Canada, therefore requested Mr. James Macoun to undertake an investigation of the Peace River country, and to ascertain the true character of the land and the climate of the upper or western portion of the region. Mr. Macoun started on this journey early in 1903.

In his summary report, published in Vol. XV of the Annual Reports, he said that he found the value of the Peace River to be all that previous visitors had represented it to be, but the cultivatable area in the valley itself is so small that it is not worth considering in a report on the whole region. On the upper Peace River plateau, which is from 800 to 1,000 feet above the river and from 2,300 to 3,500 feet above the sea, the only part that is likely to be touched by railroad for many years is about 7,000,000 acres of prairie or bluff country. The soil, a rich black loam, is of great fertility, but of varying depth. It is rich in humus compounds and in nitrogen, equalling in these respects much of the fertile prairie soil of Manitoba.

The country south of the river, including Grande Prairie, is probably a little warmer than that to the north of the river between Dunvegan and Peace River Landing. The whole of the upper country is well suited for cattle-raising during the summer, as the ground is covered with luxuriant grasses and other fodder plants; but the winters are long, and hay must be fed for fully four months. There is abundant poplar and spruce for house-building, fencing, and firewood, but no timber suitable for railway construction except for ties.

In the neighbourhood of Fort Vermilion (on the middle Peace River in 116° W. Long.) the climate is much better than in the upper Peace River region. This is due chiefly to the fact that the elevation is about 1,500 feet lower than at Grande Prairie and the district about Dunvegan. Wheat ripens here in about three years out of five, and barley and oats are seldom touched by frost.

**THE JAMAICA EARTHQUAKE.**—One of the clearest descriptions of the phenomena

associated with the Jamaica earthquake is that recently published in the *Popular Science Monthly* (Vol. LXX, May, 1907, pp. 385-403) by Professor Chas. W. Brown, who made a special expedition to study the earthquake effects. Prof. Brown points out that the earthquake was confined, in its area of greatest destruction, to small limits upon alluvial ground. A large part of the paper is given up to a description of the earthquake itself and its effects upon the buildings. Some of his illustrations are very striking. He states that in the closely-built city of Kingston, numbering about 60,000 inhabitants, about 85% of the buildings were injured or destroyed. Between January 14th and February 5th eighty shocks were noticed, and others have occurred since.

One of the most interesting parts of Professor Brown's paper is that describing the local changes in the surface features. He states that there was a zone of fissuring and subsidence from 100 to 300 yards in width, starting at the western part of the city, running along the water front, encircling the harbour, and continuing along the line of the Palisadoes, reaching greatest destruction at Port Royal. Soundings show that in several places along the edge of the harbour the bottom sank from a depth of one fathom to over six fathoms; and that on the harbour side of the base of the Palisadoes a series of step faults occurred, with a maximum depression of four fathoms. The greatest destruction along this zone of subsidence was at the western tip of Port Royal, where the buildings were tilted by the sinking, and 100 yards, more or less, were submerged from a depth of 8 to 25 feet. He states that "this fissuring of the earth was caused by the rapid tearing apart and closing of the earth's crust, accompanied generally by the ejection of water, sand, and mud, sometimes to the height of three or four feet; but the subsidence prevented the formation of any cones about these craterlets. The sands first thrown up were afterwards covered by a layer of mud." This peculiar subsidence is difficult of explanation, for it occurred along the rim of the harbour, while the middle portions of the harbour were stable, and the channel was unchanged.

R. S. T.

**CARRYING SAO PAULO COFFEE TO THE SEA.**—Consul-General Anderson, of Brazil, writes to our Bureau of Manufactures that the State of São Paulo, embracing about one-fortieth of the territory of Brazil, produces 40 per cent. of the Republic's exports. This is because São Paulo is the greatest coffee-raising region in the country. The exports pass to the coasts over the Santos-São Paulo Railroad, which is probably the most profitable investment of the kind in the world. For many miles in the interior, between successive coffee plantations, the branch lines reach out for coffee. The railroad lowers these exports about 3,000 feet down the mountain-side to Santos. For days at a time the road carries over 100,000 bags of coffee a day, each bag weighing 132 pounds. The grade is so steep that ordinary railroading is out of the question. The cable system is therefore employed. On the mountain-side the locomotives are fitted with cable grips and the cables are operated from stations very much as ordinary cable street railroads in the United States are operated. The business of the road is enormous, as it carries not only the coffee crop to the sea but also nine-tenths of the imports received at the port of Santos.

#### ASIA.

**A RAILROAD FROM THE OB RIVER TO THE ARCTIC OCEAN.**—The British Embassy at St. Petersburg reports that the Russian Commission on New Railroads has



decided in favour of the construction of the Polar-Ural Railroad (so called because it will cross the Ural Mountains). It will connect with the river systems of the Ob and Yenisei, and is expected to be the chief route for the export of Siberian raw material to Europe and for the import into Siberia of European goods. The chief commercial centres of western Siberia—Tobolsk, Omsk, Semipalatinsk, the station of Ob, Barnoul, Tomsk, and Krasnoyarsk—will thus be in connection with European ports by a railway from Sob, on the left bank of the Ob (30 versts south of Obdorsk), to Varandai Bay, on the Samoyed shore of the Arctic Ocean. The length of the railroad will be about 266 miles. The length of the river route from the station of Ob, the central commercial point of western Siberia, to the station of Sob is about 1,600 miles. The length of the sea route from Varandai Bay to London, Antwerp, and Hamburg is from 4,600 to 5,666 miles. Thus the rail carriage of freight by this route will be only about 4 per cent. of the whole, whereas by the usual transit routes it forms from 25 to 80 per cent. Navigation along the Murman coast may be considered as perfectly safe from three and a half to four months a year. The cost of building the railroad is estimated at 40,000,000 rubles.

THE JAPANESE IN SOUTHERN SAKHALIN.—*Ost-Asien* (No. 104, 1907) says that, though less than two years have elapsed since the Japanese landed troops in south Sakhalin in sufficient number to take effective possession of the coast, there are now about 15,000 Japanese living there. It will be remembered that the treaty of peace between Japan and Russia gave to the Japanese all that part of the island lying south of 50° N. Lat. (*Bull.*, 1905, pp. 724-26). In Korsakovsk there are now more than 600 houses and a school with a department for high-school studies, a post office, and a telegraph office. A fine wagon road has been built from Korsakovsk to Vladimirovka, about thirty miles, and the road is now being extended northwest across the mountains to the west coast port of Manka. A considerable number of peasant farmers have left Japan to make new homes on the island, and the Government is doing all it can for their welfare, and believes that agriculture may be successfully developed. The sum of \$135,000 has thus far been appropriated for road-building, and the Government says that south Sakhalin is to be as well provided with good highways as the neighbouring island of Hokkaido. The excellent fisheries around the southern part of Sakhalin are employing many men, and the Government received last year over \$250,000 by leasing fishing stations along the coast.

#### POLAR.

THE MIKKELSEN-LEFFINGWELL EXPEDITION.—A telegram from Victoria, B. C., on June 22, said:

A trader from Rampart-house, Porcupine River, has arrived at Cadzow with news of the Mikkelsen-Leffingwell Arctic Expedition. Captain Mikkelsen reached Herschel Island in April, and reported that the Duchess of Bedford was icebound 150 miles to the northwest, close to land. He returned to the schooner at the end of April, and said that he intended to attempt navigating further north. He reported all well.

It is evident from the above despatch that the expedition's vessel was still frozen in at her winter quarters at Flaxman Island. There is little probability, in average ice conditions there, that she got away for her journey to Banks Land before July or August. Captain Mikkelsen's letter to the Society, written last fall, was printed in the April number of the BULLETIN.

#### CARTOGRAPHIC.

REPRODUCTION OF EARLY MAPS.—A plan has been perfected for the reproduction, in the exact size of the originals, of a number of the important early maps which

illustrate the gradual expansion of knowledge concerning the geography of the New World. The series is being issued under the joint auspices of the Hispanic Society of America and the American Geographical Society, and under the direction of Professor Edward Luther Stevenson, of Rutgers College. The maps to be published include some which have only recently become known, besides a number of those familiar by name but not readily accessible. The first of the series is now ready for distribution.

This is the "Hondius World Map," the work of Jodocus Hondius, the distinguished cartographer and engraver. It could not have been drawn later than 1611. In comparison with the Waldseemüller World Map of 1507 it exhibits forcibly the progress in map-making during a century. In size the map is 160 by 246 cm.

Jodocus Hondius was the last of the three distinguished geographers and map-makers—Ortelius, Mercator, Hondius. This large World Map was probably his final, as it certainly is his greatest work, and is, therefore, an important landmark in the history of cartography.

The map was found by Professor Joseph Fischer, S.J., in the library of Prince Waldburg zu Wolfegg-Waldsee of Wolfegg, Germany, and only this copy is known to exist. It had been carelessly mounted on coarse linen, and was attached to an oaken stick, about which it was rolled:

For the purpose of reproduction and preservation it became necessary to remove the torn linen backing that the eighteen sheets might be restored, in a measure at least, to their former condition. This difficult work was accomplished in a masterly manner by the distinguished Librarian of the Vatican Library, Doctor Franz Ehrle, S.J.

The excellence of the photographic negatives, made with the greatest care, under the direct supervision of Professor Fischer, in Feldkirch, Austria, has rendered it possible to bring out in the reproduction every detail as in the original.

Adorned by six large and by more than forty small engraved pictures which fill the border and the spaces not taken by the two great hemispheres, this map is of no less significance as a cartographical masterpiece than as a masterpiece of engraving. The document is one rich in geographical record of mountains, rivers, local and regional names, and in its legends, which are numerous. This reproduction will be of great interest to specialists, collectors, and students of American history.

The map is issued in eighteen loose sheets, in a neat portfolio, with a brief descriptive text and key map. Among the maps to be published in the series are the Canerio, the Juan de la Cosa, the Sebastian Cabot, the Paris Portuguese, the Oliveriana, the Catalan Map of 1457, and others of the fifteenth, sixteenth, and seventeenth centuries.

## NEW MAPS.

### AFRICA.

AFRICA.—Die Eisenbahnen Afrikas. Five Maps on one Sheet: Algiers and Tunis, scale 1:8,000,000, or 126.2 statute miles to an inch; West Africa, Congo Basin, Northeast Africa, and South Africa, scale 1:25,000,000, or 394.5 statute miles to an inch. *Deutsche Rundschau für Geog. und Statistik*. Vol. 29, No. 8, Vienna, 1907.

The map is designed to show the present development of railroad-building in Africa. The railroads are shown in red. On the whole, the delineation is well done, but in some respects is not quite up to date. No part of the Cape to Cairo Railroad, north of Victoria Falls, is shown as completed, and the railroad between Stanleyville and Ponhierville, now in operation, is indicated merely as projected.

ALGERIA AND TUNIS.—Algérie et Tunisie. Scale, 1:2,000,000, or 31.56 statute miles to an inch. From the Atlas Niox. Charles Delagrave, Paris, 1907.

The latest edition of this well-known map, which is sheet 23 in the Niox Atlas. It has been extended west to 7° W. Long. from Paris, so as to take in a large part of eastern Morocco. The results of the French surveys along the Algerian-Moroccan border are thus included on the map. An inset shows the boundary between that part of the Sahara included in the Algerian territory and that part which is politically united with French West Africa.

EGYPT.—Provisional Map of Alexandria and Environment. Scale, 1:50,000, or 0.7 statute mile to an inch. 2 sheets. Survey Department, Cairo, 1907.

A revision of the earlier map based on the survey of 1889-1903. A detailed map, in which water, including numerous canals, is shown in blue, the other information being given in black. Villages, forts, markets, roads, paths, coastguard stations, and many other facts are given.

EGYPT.—Egypt. Scale, 1:50,000, or 0.7 statute mile to an inch. Sheets, IV-IV and V N.E.; XIV-, XX-IV, and XX-V S.E. Survey Department, Cairo, 1907.

SAHARA.—Itinéraire au Sahara et au Soudan. Scale, 1:6,000,000, or 94.6 statute miles to an inch. By R. Chudeau. *La Géographie* No. 4, Paris, 1907.

Illustrates Mr. Chudeau's paper on his journey (Feb., 1905-Nov. 1906) through the Sahara from Inzize to Lake Chad and from Lake Chad to Gao on the Niger.

#### AMERICA.

##### U. S. GEOLOGICAL SURVEY MAPS.

UNITED STATES.—Geologic Map and Sections showing Structural Relations of the Oil and Gas Bearing Formations in Southeastern Kansas. Scale, 1:375,000, or 5.9 statute miles to an inch.

UNITED STATES.—Geologic and Topographic Map and Section of Independence Quadrangle, Kansas. Showing Location of Oil and Gas Wells in October, 1904. Scale, 1:125,000, or 1.9 statute mile to an inch.

The above two maps illustrate *Bulletin* No. 296, in which Messrs. F. C. Shrader and Erasmus Haworth present the substance of what is known concerning the distribution, occurrence, and development of the oil and gas of the Independence Quadrangle, Kansas, and note the more important industries growing out of these natural resources.

UNITED STATES.—Geologic Map of the Zinc and Lead Regions of the Upper Mississippi Valley. Scale about  $3\frac{1}{4}$  mile to an inch.

The map illustrates *Bulletin* No. 294, by H. Foster Bain, of the Illinois Geological Survey, on the "Zinc and Lead Deposits of the Upper Mississippi Valley." These lead and zinc mines are in southwest Wisconsin and in adjacent parts of Illinois and Iowa. The map shows that the region is roughly triangular, with a maximum extent of 80 miles from north to south, and 60 miles from east to west, and comprises about 2,500 square miles. In his text the author gives an historical sketch of the discovery and development of these important ore deposits, treats the topography and geology of the region, the general character and composition of ores, their mode of occurrence, genesis, and their economic importance, and describes the mines, over 130 in number. The mines are shown on the map by figures in red, which refer to the list of mines in the margin.

UNITED STATES.—Potomac River Drainage Basin above Washington, showing Mean Annual Precipitation for Decade 1895-1905. Scale, 1:633,600, or 10 statute

miles to an inch. Water Supply and Irrigation Paper, No. 192, U. S. Geol. Sur., Washington, 1907.

Topography is shown with contour interval of 500 feet, drainage in blue, and lines of equal precipitation reduced to the common period, 1895-1905.

UNITED STATES.—(1) Geologic Map of the Juneau Gold Belt. (2) Topographic Map of the Juneau Gold Belt. Scale of each, 1:250,000, or 3.95 statute miles to an inch. *Bull.* No. 287, U. S. Geol. Sur., Washington, D. C., 1906.

These maps, in colours, illustrate a monograph on the Juneau Gold Belt, by Arthur C. Spencer. The maps as originally printed were on a scale of about 2.8 miles to the inch, but for the present purpose they were reduced to 3.95 miles to the inch. Upon this scale they give a good representation of the topography and afford an adequate base for showing the distribution of the geological formations. The maps show the mainland from Port Houghton to the International boundary at the head of Chilkat River, including also the peninsula between Lynn Canal and Glacier Bay. The geological map indicates the more general areal relations of the rocks throughout the Juneau belt.

UNITED STATES.—Geologic Map of the Vicinity of Juneau with Cross Section. Scale, 1:62,500, or 0.9 statute mile to an inch. *Bull.* 287, U. S. Geol. Sur., Washington, D. C., 1905.

The distribution of five types of rocks which have been recognized is indicated by colours and patterns, the meaning of which is shown in the key in the margin.

UNITED STATES.—Map of Alaska showing Distribution of Coal and Coal Bearing Rocks as far as known. Scale, 180 statute miles to an inch. In *Bulletin* No. 314, U. S. Geol. Sur., Washington, 1907.

Illustrates a paper by Mr. G. C. Martin on the Alaska coal fields. The map shows areas of high-grade anthracite and semi-bituminous coal of workable thickness, areas of lower-grade coal of workable thickness, areas of workable lignites, and areas of coal-bearing rocks.

#### U. S. HYDROGRAPHIC OFFICE CHARTS.

Pilot Chart of the North Atlantic Ocean, July, 1907.

Pilot Chart of the North Pacific Ocean, July, 1907.

UNITED STATES.—Stratigraphic Map of the Portage Division in Western New York. (No scale given.) By John N. Clarke and B. Dana Luther. In 57th Annual Report, Vol. 3, Appendix 8. Albany, 1905.

Illustrates a paper by Dr. Clarke on "Naples Fauna in Western New York." Colours show the stratified rocks that were laid down in Portage time in the New York Sea, west of the present meridian of Cayuga Lake.

DOMINICA.—Scale, 4.2 statute miles to an inch. By Symington Grieve. Adam & Charles Black, London, 1906.

A black-and-white sketch map illustrating Mr. Grieve's "Notes upon the Island of Dominica." Mr. Grieve says the map "is an improved drawing from a map that is considered official, bringing it up to date as far as possible; but, unfortunately, it is quite unreliable in many details." This is not to be wondered at, as Mr. Grieve says his map is based upon the Byre map, which was published in 1776! The island, evidently, is in need of a scientific survey. In the absence of anything better, this map will be useful as giving an idea of the meagre road system and the position of the new plantations.

MEXICO.—Übersichtskarte des Isthmus von Tehuantepec. Scale, 1:2,000,000, or 31.56 statute miles to an inch. *Zeitschrift* of the Berlin Geog. Soc., No. 5, Berlin, 1907.

A black-and-white sketch map showing the route of the recently-completed railroad across the Isthmus of Tehuantepec with the several stations, the railroad from Vera Cruz which joins it about midway in the Isthmus, and the starting-point at San Geronimo of the railroad to Guatemala. The name of the Gulf terminus of the line has been changed from Coatzacoalcos to Puerto México, which appears on this map. Plans of the terminal points and harbours of Salina Cruz and Puerto México are given on the same sheet. The map illustrates an article by G. W. von Zahn on the Isthmus.

## ASIA.

CHINA.—Postal Map of China (1906). Returns of Trade and Trade Reports for 1906, Shanghai, 1907.

The map shows that the extension of the postal service by courier, steamer, or launch and railroad has been considerable since the map for 1905 was issued. Insets give more detailed information for the Newchwang, Canton, Shanghai, Suchow, and Hangchow districts.

## ASIA.

DUTCH EAST INDIES.—Opneming van Zuid-Sumatra. Scale, 1:1,500,000, or 23.67 statute miles to an inch. Annual Report of the Topographic Service in the Dutch Indies for 1906. Batavia, 1907.

An index map to the survey sheets of South Sumatra, and showing areas that have been surveyed on the scale of 1:25,000 and 1:100,000.

DUTCH EAST INDIES.—Het Bergstelsel van West Timor. Scale, 1:1,000,000, or 15.8 statute miles to an inch. Annual Report of the Topographical Service in the Dutch East Indies for 1906. Batavia, 1907.

The ranges and isolated mountains of West Timor are shown in brown, with many elevations in meters.

FRENCH INDO-CHINA-SIAM.—Frontière Franco-Siamoise en 1907. Scale, 140 statute miles to an inch. *Revue Française*, No. 341. Paris, 1907.

A black-and-white sketch map illustrating an article by Mr. Joseph Joûbert on the "French-Siamese Treaty of 1907." It will be remembered that the treaty of 1904 did not prove satisfactory. The map shows the territories acquired by France under the treaty of 1904, those receded to Siam in 1907, and those ceded to France by the same treaty.

SAKHALIN.—DIE INSEL SACHALIN. VON MAX FUNKE. Scale, 1:4,000,000, or 63.1 statute miles to an inch. Gebauer-Schwetschke. Halle a. S., 1906.

Illustrates a monograph by Mr. Funke on Sakhalin. It is based on Russian explorations to 1905, and shows the political changes since that time. It is in colours, and gives more information about the island than usually appears. It shows Russian, Japanese, and native settlements, the boundaries between the habitats of the Ainos, Gilyaks, and Tungus, the distribution of swamps and tundra, mountain passes, seaports, highways, and telegraphs. It does not indicate the stretches of coast most important in the fishing industry.

## EUROPE.

GREAT BRITAIN.—Bartholomew's Plan of London. Scale, 3.25 inches to a statute mile. Four Sheets (N.E., N.W., S.E., and S.W. Sections). Revised to date. John Bartholomew & Co., Edinburgh, 1907. (Price, paper, 1s.; cloth, 2s.)

This standard map of London is on a scale so large that the name of every lane and street may easily be read. All the transportation routes, with depots, stations, and starting-points, are emphasized so that tourists find the map especially convenient. The omnibus and tramway routes in brown are the most conspicuously-marked streets. The railways are in black, the underground roads in black and red, and the parks and commons in green. All the conspicuous public buildings are named, and the sheets are divided into half-mile squares, which make distances easily computable.

THE ALPS.—Karte der Quartären Ablagerungen des Saanegebietes. Scale, 1:100,000, or 1.5 statute mile to an inch. By Fritz Nussbaum. Jahresbericht of the Berne Geographical Society, Vol XX, Berne, 1907.

The Saane basin lies in the western part of the Bernese Alps. Dr. Nussbaum spent twenty weeks of 1904-5-6 in making the surveys of the distribution of the alluvial and morainal material which are shown in colours on his excellent map. It illustrates an exhaustive monograph published in this number of the Jahresbericht under the title of "Die eiszeitliche Vergletscherung des Saanegebietes."

#### POLAR.

ARCTIC.—Map to Illustrate the Voyage and Arctic Explorations of Captain Roald Amundsen. Scale, 1:2,000,000, or 31.56 statute miles to an inch. From surveys by Lieut. G. Hansen, 1903-1906. With insets of Neumayer Peninsula, King William Land, scale 1:125,000, or 1.97 statute miles to an inch; and North Polar Chart showing route of the *Gjøa* from Christiania to Nome. *Geog. Jour.*, May, 1907, London.

Illustrates the paper read by Captain Amundsen before the Royal Geographical Society on Feb. 11, 1907. The map is especially interesting for the outlining of the hitherto unknown east coast of Victoria Land from Point Pelly to Cape Nansen between 7° and 72° N. Lat. Amundsen has named this coast King Haakon VII Coast, and the waters between Victoria Strait and the Canadian coast have received the name Queen Maude Sea. A large island between King William Land and Victoria Land was named Royal Geographical Society Island. The sledge routes and the track of the *Gjøa* are shown in red.

#### ATLASES.

ATLAS OF CANADA.—39 Maps, 44 Diagrams, and many Statistical Tables. Prepared under the direction of Mr. James White. Department of the Interior, Canada, 1906.

This large folio places Canada among the countries that have given adequate expression by means of maps and diagrams to a large variety of geographical and statistical information. The atlas is a home product, prepared under the direction of Mr. James White, geographer of the Department of the Interior, and produced by the Toronto Lithographic Company. Mr. White is to be congratulated upon the merits of this laborious compilation.

Mention of some of the leading features will show the wide range of information given. The maps are preceded by 11 pp. of population statistics. The map of the territorial divisions shows all the Arctic islands, including the recent discoveries of the Norwegian explorer Sverdrup as belonging to Canada.

Sheets 2 and 3 show elevations from sea-level to over 10,000 feet in white and six tints of brown. The surface geological features of the Dominion are indicated in colours on two double sheets. Two sheets are given to the distribution of mine-



rails, with shading to show the areas covered by the more important gold, silver, coal, iron, and salt districts. Quartz gold is distinguished from placer gold mining and a line stretching across the Dominion shows that north of it the country is virtually unprospected excepting along some of the principal rivers.

Among other maps are those showing the distribution of forest, prairie, and mixed forest and prairie; the distribution of the telegraph, telephone, and cable connections; railroad systems with areas coloured to show to which systems they are chiefly tributary; canals, lighthouses, and sailing routes on the St. Lawrence, Great Lakes, and Atlantic coast, with bathymetric tints giving depths in fathoms; isothermic, rainfall, snowfall, barometric, temperature, and sunshine charts; population and boundary maps; distribution of Indians and Eskimos, routes of explorers, including Amundsen's northwest passage, drainage basins, plans of all leading cities and a large number of statistical diagrams.

ATLAS UNIVERSEL DE GÉOGRAPHIE.—Ouvrage commencé par Vivien de Saint-Martin et continué par Fr. Schrader. 90 Maps. No. 63, Algérie, Tunisie. Scale 1:2,500,000, or 39.4 statute miles to an inch. Hachette & Co., Paris, 1907.

Sixteen of the 90 sheets of this great cartographic work are still to be produced. The present sheet gives the very best cartographic expression to our present knowledge of Algeria and Tunis and the parts of the Sahara as far south of them as the Tuat oases. Recent Government surveys in this large region have added many data which are fully utilised. The meanings of the Arabic and Berber names are given in the legend. A large number of camel routes are laid down. Heights are in meters.

#### BOOK NOTICES.

**Oestrymnis-Ophiusa (Ancient Geography of Galicia). By Celso García de la Riega.** (From Vol. XLVII of the Boletín de la Real Sociedad Geográfica. Madrid, 1905.)

A polemic paper directed almost exclusively against the "*Estudios Ibéricos*" of Martins Sarmento (Madrid 1891-1895). With a profusion of learned disquisitions the author attempts to locate Oestrymnis, as well as the Cassiterides, in Galicia. His monograph is chiefly a discussion of the *Oræ Maritimæ*, the poem by Rufus Festus Avienus. For local geography of the Galician coast and the Atlantic shores of Spain (and Portugal) the paper is certainly very valuable. It shows an intimate acquaintance with the regions, but we cannot permit ourselves to express opinions about the merits of the evidence produced in the controversy. Until now, however, we had believed the Cassiterides to be Cornwall. Señor de la Riega, in support of his dissenting conclusions, calls attention to the confusion, not infrequent among ancient writers, between islands and promontories, the latter being, from imperfect acquaintance with the mainland, taken for islands. It is well to treasure the remark, since it appears to be well founded; but we think he goes a little too far in stating that the tin deposits of Cornwall are insignificant and have been exploited only in modern times. There is too much of the *Pro Domo Sua* in this sweeping assertion. The linguistic data at the close of the paper must be important for a study of ancient history of Spain, anterior to the Roman domination. They show considerable relationship between the Gallegan or Galician idiom and the Biscayan. Other ethnologic proof of ancient connections of these peoples, and of a rather striking nature, is added.

A. F. B.

**Refranes y Cantares Geográficos de España. A Lecture by Gabriel María Vergara.** (Real Sociedad geográfica, Madrid, 1906. Vol. XLVII.)

This most interesting lecture has one defect. It is too short! After perusing it we feel an appetite for more. No country in the world is so rich in popular proverbs and folk-songs as Spain. The meridional character of its people and the great diversity in their origin, coupled, in former times, with local segregation, may be one of the reasons for it. The lecturer, who pronounced this very interesting discourse before the Royal Geographical Society at Madrid in March, 1906, has only grazed the enormous field open to investigation and enjoyment in Spanish folk-literature, though the knowledge of it has hardly reached beyond the domain of the Spanish language. In its own country, however, it has not been neglected by students, and its importance as a storehouse of popular knowledge in numerous branches, was recognized as early as 1834 by Don Fermin Cavallero. The number of works illustrating such topics is not small, neither have the results derived from the study of proverbs and songs been inconsiderable. The author justly says of them: The proverbs and songs are abbreviated forms (formulas) of popular science, . . . . . (they) constitute the true popular Encyclopedia in which all branches of knowledge are represented . . . " These characterizations are fully justified by the examples given.

Señor Vergara begins with such sayings as embody criticisms of one or more localities by the inhabitants of another. If these (he remarks) were all to be believed, "there would not be, in Spain, a single district whose inhabitants are not ingrates, replete with vanity, silly, vindictive, bad friends, venal, thieves; in short, who would not have one or more qualities compelling them to be shunned like the very demons." To such exaggerations of a negative character he opposes numerous specimens of praise and encomium bestowed in popular song on places and their inhabitants. Costume and customs are alluded to frequently, and the local colour imparted is of special interest. Finally, there is the vast field of geographic information of the most varied kind, which the author illustrates forcibly. But that field is so vast that time and space have failed him and we are left to consult other sources for more on the subject so attractively presented by Señor Vergara. He fortunately gives the titles of the principal works on "Refranes" (Proverbs) and "Cantares" (Songs), of which the one by Don Carlos Puente y Ubeda, the first volume of which treats of Climatology as represented in popular lore (Madrid, 1896), is the most recent thorough specimen. Its publication has relieved Señor Vergara from the task of including in his lecture that particular side of Spanish songs and proverbs. The "Refranero Meteorológico de la Península Ibérica" by Puente y Ubeda is almost unique. A. F. B.

**The Mohammedan World of To-day. Edited by S. M. Zwemer, E. M. Wherry, and James L. Barton.** New York, London, etc., F. H. Revell Co., 1906. Pp. 295.

The reader who hopes to find in this book a full treatment of the Mohammedan world as it exists to-day will be disappointed. He will, however, find many geographic facts of high value, much in regard to the relation of Mohammedanism to Christian missions, and a few broad generalizations, together with excellent statistics. The book consists of a series of nineteen papers presented by their authors at the First Missionary Conference on behalf of the Mohammedan World, held at Cairo in April, 1906. Each of the countries where followers of

the Prophet live is dealt with briefly, and emphasis is given to political, educational and social, as well as religious conditions. Politically only 16 per cent. of the Mohammedans of the world are under rulers of their own faith; 14 per cent. are under other non-Christian rulers, chiefly in China; and the remaining 70 per cent. are under Christian rule or protection. As one author says:

The European Governments generally adopt an attitude of neutrality or toleration toward all religions, Mohammedanism among them. Yet it is to be noted that from country after country the report comes that, on political grounds, these nations are led to adopt a policy which specially favours Mohammedanism.

Education appears to be making but slight progress, for in most cases over 90 per cent. of the people are said to be still illiterate. Nevertheless, the Turks and others, of their own initiative, are endeavouring to establish a modern system of education, chiefly, it seems, for fear that otherwise the brightest children will be sent to Christian schools and will cease to be zealous Moslems. Movements for religious and social reform are mentioned in Egypt, Syria, Persia, and India; but only the Persian movement seems to have been at all successful. Beginning as Babism this movement has lately become known as that of Behai. It enjoins monogamy, prohibits divorce, and inculcates honesty and religious toleration. Its defenders claim for it 1,000,000 adherents. According to its detractors it is almost as bad as the old style of Mohammedanism, and has only 200,000 followers at most.

In summing up the present condition of the followers of Islam one writer says:

It may be that these nations are what they are because of their racial character, even more than because of their religion; but those who know them best think that their natural qualities are their best qualities, and that their worst qualities are those which spring from their religion.

A perusal of the book as a whole does not fully support this conclusion. In many cases racial traits prevail over the better teachings of religion. For instance, a notable characteristic of the Mohammedan of India is his caste-feeling, his aloofness from people of other religions, whose food he will not touch, although most Mohammedans eat freely with all sorts of people. Again, the writers of the chapters on the East Indies emphasize the fact that there the people are at heart much the same as they were in the old fetish-worshipping days before Islam had been grafted upon paganism. Among the 30,000,000 followers of the Prophet in China the failure of Mohammedanism during nearly a thousand years to eradicate or even alter racial traits incompatible with the precepts of that religion is notable. To quote from the chapter on China:

Mosques are found in many cities; . . . but there is apparently little interest taken in the services. . . . As regards outward observances, the distinguishing features of Mohammedans in China are their abstention from idol-worship, and their observance of the prohibition against the eating of pork. . . . Other important tenets, such as circumcision, almsgiving and fasting, are also observed; but there appears to be an entire absence of that fanaticism, proud exclusiveness, uncompromising orthodoxy, and thirst for proselytism which so distinguish the Moslem in countries nearer home.

Immorality of the most degrading sort is mentioned in several chapters as the greatest evil connected with Mohammedanism, but it is noticeable that little is said of it in India, the East Indies, China, and the parts of Africa inhabited by negroes. Of course, it exists in all these places as a frightful curse, but not in the aggravated form in which it is found in Turkestan, Baluchistan, Persia, Arabia, and northern Africa. These lands are inhabited by various races—Mongoloid, Aryan, and Semitic—but they are alike in being extremely dry, far more so than the Mohammedan lands where immorality is less flagrant. The question at once arises whether climatic conditions may not have more to do with morality

than is generally supposed, and whether the attitude of Mohammedanism toward morality is not due largely to the physical conditions under which that religion originated.

Mohammedanism is not gaining converts except in West Africa, nor is it losing by conversions to Christianity. Estimates as to the total number of Moslems in the world to-day vary from 175 to 300 million. In the final chapter the number is given as 233 million, about one-seventh of the population of the world. E. H.

**Geschichte des deutschen Bodens mit seinem Pflanzen- und Tierleben. Von J. Wimmer.** Halle a. S., Buchhandlung des Waisenhauses, 1905.

The evolution of the soil of Germany and its products, from the earliest times to the present, is one of the subjects bordering on geography and history alike, and therefore the students of both these sciences are bound to be indebted to the author for his careful and minute researches into these subjects. In the first part he deals with the history of the soil proper; in the second, with that of its flora and fauna. The former is the more directly geographical, while the latter will be found a rich mine of reference for botanists and zoologists for all kinds of questions pertaining to animal and plant species, living or extinct, of that region.

The author differentiates between "Wildboden" (uncultivated soil) and "Kulturboden" (cultivated soil), and the transition from the former to the latter forms the history of the soil. In this four stages or periods can be distinguished: (1) the Celto-Romanic or primitive condition; (2) the period of the migration of the nations; (3) the conquest of the wildernesses from 600-1300 A.D.; (4) extension and transformation of the cultivated area, from the 14th to the 19th century.

The primeval aspect of the country has been described by Julius Cæsar and Tacitus as being characterized by its dense woods. They covered the mountain ranges and extended downward from them into the lower country; and it is significant that the Latin texts, in describing German topography, always use the words "*saltus*" or "*sylvæ*" in place of "*montes*." This will easily explain why so many German mountains have the name of "Forest" even now: "Black Forest," etc. From these reports, however, the erroneous conception has been formed of old Germania having been an unbroken forest wilderness. The mere fact that even in those primitive times almost inexhaustible hordes of Germanic origin were pouring forth again and again into the Roman provinces proves it cannot have been so, because an unbroken forest land could not support such a comparatively large population. It cannot be assumed, either, that at those early times the inhabitants had cleared enough land to support them, because primitive man will not clear the soil unless he has learned beforehand the value of the soil as the producer of his food. It follows that the primeval forest, in its original aspect, must have been interspersed in many places with openings or glades where a spontaneous growth of plants fit to eat taught man to improve upon nature by a primitive form of agriculture. Such open spaces, which must have been quite densely populated, could not be found in the valleys of the rivers, because in those times the valleys were unhealthy and practically uninhabitable, but rather on the higher and drier land at or near the base of the mountains, and historical researches have proved the truth of this hypothesis. The traces of the earliest settlements have been discovered on the Bavarian Plateau, along the fall line at the eastern border of the upper Rhine Valley, and on the plains of Central Germany near the

upper and lower courses of the Elbe and Saale. The character of these settlements differs according to the race of the settlers: north and east of a line drawn along the River Main and from Frankfurt to the lower course of the Weser, the population was Germanic, and lived in villages; south and west of that line it was Celtic, and lived on single farms. When the former penetrated into the Celtic territory, they either substituted their form of settlement for that of the Celts, as in Franconia, or adapted themselves to the system which they found, as in Westphalia. These cross relations are rich in very interesting detail from both the historical and geographical point of view. Into the territory which the Germans had left vacant behind them, the Slavs penetrated from the East, and they, too, founded villages; but theirs were built either circularly, around a pool or pond, or along a street, following the course of a river or brook. The Slavs always settled near the water, except where they occupied previously German settlements.

The reclamation of the wilderness was not begun until after the migration of the nations, and carried on especially by the meritorious efforts of the religious orders who came thither as missionaries, but also, following their example, by the Emperor Charlemagne and the lords of feudal Germany. Among the farmers of the Middle Ages it was the custom to leave the farm to the eldest son, while the others were sent out into the wilderness to break the ground for new homes of their own, in very much the same way as did the squatter in the American border regions. But Europe woke up earlier to the consciousness of the danger incident to a wide devastation of the forests, as is known by ordinances from kings and magistrates, at a very early date, enjoining moderation in the work of clearing, and the reforestation of all tracts not permanently available for cultivation. In the fourth period the work of reclamation has been carried on practically by draining the swamps and moors, of which the work done under Frederick the Great in the Oder "Bruch" is perhaps the most gigantic task of this sort carried out before the invention of modern machinery; it was said that by doing this the king had conquered another province in peace, as he did Silesia in war. The "Möser" of the Bavarian plateau, and the extensive moors of north western Germany, are other examples of successful drainage on a large scale.

M. K. G.

**Handbuch der geographischen Ortsbestimmung. Von Dr. Adolf Marcuse.** Braunschweig, Friedrich Vieweg und Sohn, 1905.

The book is intended as a guide for geographers and explorers, and also as an introduction into the practical problems of astronomy for students and teachers at the higher schools. The first part (63 pp.) gives an abstract of the principal chapters of astronomical geography; the second (35 pp.) describes and characterises the various uses of the most important works of reference: nautical almanachs, ephemerides, tables, etc., for mathematico-geographical calculations; the third (79 pp.) treats in a similar way the instruments needed for the work (chronometers, telescopes, quadrants, etc.), and the fourth and main part of the book discusses the modern methods of determining time, latitude, longitude, and azimuth. Among them special mention ought to be made of an original way of determining location without the use of logarithms (Merkatorfunktionen) or of angle meters (by means of thread triangles), which can be used wherever the instruments may be found at fault, with approximately accurate results. Another new feature is the instructions for determining locations on balloon trips, based on experiments at the Aeronautical Observatory at Berlin. The illustration of

every process by one or more well-chosen examples makes the book as valuable from the pedagogical as its completeness does from the scientific, point of view, and type, figures, and charts do great credit to the care and skill of its publishers.

M. K. G.

**Aids in Practical Geology. By A. J. Cole.** Pp. 431. Crown 8vo. London, Chas. Griffin & Co., 1906. (10s. 6d.)

[Mr. Cole is Professor in the Royal College of Science for Ireland.]

This volume is the fifth edition. It is a comprehensive and, for the most part, a practical treatment of subject-matter usually taught in mineralogy, lithology, and paleontology. Consequently, the book is divided into three principal parts corresponding to these divisions.

Of the twenty-eight chapters, the following are some of their headings: Observations in the Field; Collecting and Packing Specimens; Physical Characters of Minerals; Simple Tests with Reagents; Blow-pipe Tests; Optical Properties of Minerals; Sedimentary Rocks; Igneous Rocks; and Metamorphic Rocks. Chapters twenty-two to twenty-eight describe the larger divisions of invertebrate fossils. This part, consisting of one hundred and thirty pages, is a very good manual on fossils, one of the best of its kind. The aids for the study and determination of minerals and rocks are very simple and clear. They should be of material assistance to practical geologists.

Professor Cole has given us a very useful book. It is carefully written and illustrated by 136 figures and a frontispiece. We need more publications like this one and the Structural and Field Geology by Professor Geikie. The two texts supplement each other and cover much of the scope of field and laboratory studies in practical geology.

G. E. C.

**A Text Book on Mining Geology. By James Park.** Pp. 219. Crown 8vo. London, Charles Griffin & Co., 1906. (6s.)

[Mr. Park is Professor in Mining Geology, and Director of the Otago University School of Mines. Formerly he was Geologist to the Government of New Zealand.]

This little volume gives a general survey of the subject, treating the geological conditions which bear important relations to mining. It is not an economic geology; neither is it a text on mining. It holds very closely to the view point of mining geology—a subject which is rapidly assuming form and importance.

The nine chapters are headed: Introductory; Classification of Mineral Deposits; Ore Veins; Dynamics of Lodes and Beds; Ore Deposits Genetically Considered; Theories of Vein Formation; Ores and Minerals Considered Economically; Mine Sampling and Ore Valuation; and The Examination and Valuation of Mines.

In the sequence of subjects no attempt is made to treat the metallic and non-metallic deposits separately; yet the first-named are discussed the more fully. Clay, sand, and building stone are not considered—omissions rarely made in the general courses of American schools. This omission should be remedied by adding two or three chapters.

The text is carefully written and quite well illustrated. It contains frequent references to geological literature, especially to American and English publications.

This book will assist in giving elementary mining geology a place in mining



schools. However, it is not complete enough for class use in schools having well-outlined courses in geology. It should have a large sale to miners who have not completed a technical course.

G. E. C.

**From Trail to Railway. Through the Appalachians. By A. P. Brigham.** v and 188 pp., Illustrations from Photographs and Index. Ginn & Company, Boston, 1907.

This is a simply-told story of the development of transportation facilities east and west in our country, from the trails of the Indians along the Mohawk to the Erie Canal and the great trunk lines. It is a reading book for schools in which geography is a part of the texture of the fascinating narrative, and is thus brought close to human interests. Professor Brigham shows in this little volume how effectively geography and history may be correlated to the great advantage of both studies. The maps, made with relief effect, are adequate because all essential facts are given and clearly set forth. The book has the advantage of the fulness of knowledge, lucidity and literary gift, which mark all the writings of Professor Brigham, and make even his formal text-books good reading.

**The Early Cave-Men. By Katharine Elizabeth Dopp.** 183 pp. and many Illustrations. Rand, McNally Co., Chicago, 1904. (Price, 45c.)

This book is intended for elementary schools, the purpose being to give young pupils some conception of the beginnings of human activity. Dr. Dopp, already known for her advocacy of giving industries a place in elementary education, collected her material from the best sources, and her simple story of the early cave-men is grounded upon assured facts that anthropologists have gathered. Men, women, and children move through the narrative as in any other story, and we learn why the people wished to live in caves and how they produced fire, made weapons, baskets, skin clothing, and other things and gradually discovered more and more ways of utilizing the natural resources around them. Many questions are asked, activities are suggested that may be carried out in hours of work or play, and the pictures strikingly illustrate the text.

**Beobachtung als Grundlage der Geographie. Von Albrecht Penck.** 62 pp. Gebrüder Borntraeger, Berlin, 1906. (Price, M. 1.60.)

Two papers by Dr. Penck, one being his farewell remarks to his pupils in the University of Vienna, and the other his address upon taking the Chair of Geography in the University of Berlin as the successor of von Richthofen. The author emphasizes the necessity of independent observation rather than the mere collection and compilation of facts as the basis of scientific geographical study. He would found the study upon first-hand investigation and make it subjective through the exercise of the intellectual faculties and objective through the results of observation. He speaks of Austria as especially rich in opportunities to study geographical problems in the field and believes that geographers should be equipped for making the surveys required for good original maps.

**The Mountain People of Kentucky. An Account of Present Conditions. With the Attitude of the People Toward Improvement. By Wm. H. Haney.** 196 pp., Illustrations, Appendix and Index. The Robert Clarke Co., Cincinnati, 1906. (Price, \$1.50.)

Mr. Haney was born and reared in the mountain region of Kentucky. He describes the conditions of life where mountain barriers and bad roads or

none at all have done much to restrict travel and to isolate the inhabitants. He gives many facts to show that much which has been said about the mountain people is not true, but he frankly admits that the geographical environment has tended to keep them back ward. His book is mainly devoted to a description of the people, their social condition, industries, and educational opportunities, their politics and religion; and he evidently desires to tell the unadorned truth about things just as he has seen them all his life. He shows many photographs of fine-looking mountain boys and girls and energetic young men and says the tendency of the inhabitants is progressive. On the whole, the book is meant to be a vindication of the mountaineers and an assurance of their favourable attitude towards improvement.

**A Vision of India.** By Sydney Low. xiv and 365 pp., 49 Illustrations from Photographs, and Map. E. P. Dutton & Co., New York, 1907. (Price, \$3.50.)

The author accompanied the Prince and Princess of Wales through India, in 1905-6, as the correspondent of a London newspaper. He deviated at times from the route of the Royal travellers, it being his purpose to write a book giving a general idea of the conditions of life and society in India. It was not to be expected that his book would add anything to our geographical information or that, in a few months, he might so thoroughly study a vast domain as to be able to give a scientific account of it. What he has accomplished is to give, with the art of a talented and experienced writer, a series of impressions of many phases of India, "its splendor and its contradictions, its wealth and poverty and its medley of classes, creeds and peoples." The book is very readable, has abundance of entertainment and information, and is an excellent work of its kind.

Naturally the completeness of statement needed to convey just the right idea is sometimes lacking. The author writes, for example: "We [the Indian Government] have abolished Suttee," and adds that this self-immolation by widows still occurs occasionally. A different impression of the matter is given by Swami Abhedananda in his "India and Her People," *suam cuique*:

It has often been said that the Christian government has suppressed Suttee; but the truth is that the initiative in this direction was taken by that noble Hindu Rājāh Rām Mohan Roy, who was, however, obliged to secure the aid of the British Government in enforcing his ideas, because India was a subject nation. The educated classes among the Hindus had strongly protested against the priests who supported this inhuman custom (which prevailed only in certain parts of India), and efforts had been made to suppress the evil by force; but, as it could not be done without official help, appeal was made to the Viceroy, Lord Bentinck, and a law against Suttee was passed. Thus the evil was practically suppressed by the Hindus themselves, aided by the British government.

**Die Parlamentarische Studienreise nach West- und Ostafrika. Reisebriefe aus Togo, Kamerun und Deutsche-Ostafrika.** Von Dr. Otto Arendt. 174 pp. C. A. Schwetschke und Sohn, Berlin, 1906. (Price, M. 3.)

This is a welcome addition to the books giving an account of the material and educational progress in various parts of Africa. The German Reichstag sent a Committee of Inquiry to Togo and Kamerun in 1905 and another to German East Africa in 1906. Dr. Arendt was the only member of the Reichstag who was on both committees, and in this volume he tells where they travelled and what they saw. It is evident that the committees had a good time and were very much impressed and often surprised by the evidences of transformation that were continually observed.

The author says that the best of order is preserved in Togo, which, in its

rapid advancement, is really setting a pace for all the other colonies. The roads are well kept, the streets of Lome (the capital) are broad and no litter is permitted to accumulate on them, the natives are peaceful and intelligent and in their cleanliness and attire he thinks them far superior to the "free citizens" of Liberia.

In Kamerun the visitors saw little evidence of sickness among the whites, and were convinced that the peril of fever had been considerably exaggerated and also much reduced by intelligent hygienic methods. Buea, the capital of the colony, is high on the slope of Mt. Kamerun and is a healthful and a beautiful place. To reach it from the port of Victoria the visitors travelled for miles on the narrow gauge railroad that has been built by Mr. Esser through his cacao plantation, which is one of the largest planting enterprises in the tropics.

German East Africa only enhanced the excellent impression that the west coast colonies had made. In fact, Dr. Arendt believes that tropical east Africa offers more advantages for a high stage of development than the west coast. "I returned from German East Africa," he writes, "with the firm conviction that we possess there a German East Indies, and that if we do not make much of it the blame will rest not on the colony but on ourselves."

The present rate of progress in the European colonies of tropical Africa is no less remarkable than the wonderful era of discovery that made most of Africa known to us in a single generation. Such books as this are useful as marking the milestones along the way.

**Le Siam et les Siamois. Par le Commandant Lunet de Lajonquière.** Librairie Armand Colin, Paris, 1906. (Price, 3.50 fr.)

Siam is one of the oriental countries which are absorbing much of the science of the West. The author went there in charge of an archeological mission to the valleys of the Menam and the Mekong rivers. He improved the opportunity to study the Siamese and their country, and especially to note the extent to which Western influences are beginning to modify their lives and work. He gives a general view of the kingdom, its government, commerce, industries and resources, pictures the Siamese as they are at home, describes the activities of the foreigners among them, and shows the change that is coming over land and people—not rapidly, as in Japan, but gently, naturally, and surely towards closer affinity, in many respects, with Western development. He visited nearly all the provinces of the kingdom, and he takes his readers on a land route between Rangoon and Bangkok, now almost unknown, but which seems destined to have a large commercial future. The book is a valuable addition to the works on Asiatic countries which the firm of Armand Colin has published.

**Kleine Sammlung wissenschaftlicher Wetterregeln. Von Dr. W. A. Michelson.** v and 17 pp. Friedrich Vieweg und Sohn, Brunswick, 1906.

The author is Professor of Physics and Meteorology in the Agricultural High School of Moscow. His booklet, published in Russian in 1900, met with such favour that it has been translated into German. The little work is meant especially for farmers and others whose business is most affected by weather conditions. It presents the weather signs or indications that are approved by meteorologists in the form of 74 rules, simply expressed, the author believing that in this form the contents will be more helpful to the general public than if he should attempt a systematic development of a complex subject.

**Elephant and Seladang Hunting in the Federated Malay States.**

**By Theodore R. Hubback.** xv and 288 pp., and 17 Illustrations from Photographs. Rowland Ward, London, 1905. (Price, 10s. 6d.)

Parts of the Malay peninsula are still very little known, and, in fact, this small region has been the scene, within the past three years, of pioneer explorations, which the *BULLETIN* has recorded. The author's wanderings in this territory have therefore a taste of novelty, and his excellent pictures of Sakais and characteristic landscapes are very acceptable. He keeps, however, so closely in touch with his hunting exploits that little geography is to be extracted from the volume. The evidence he gives that the elephant and seladang (wild buffalo) are as dangerous and formidable game as sportsmen can be asked to encounter is quite convincing.

**Some Cities and San Francisco and Resurgam.** **By Hubert Howe Bancroft.** 64 pp. The Bancroft Company, New York, 1907. (Price, 50c.)

A brief treatment of many cities, showing especially how great fires have tended to bring about improvement in their rebuilding and adornment and have often been blessings in disguise. After the Great Fire of 1666 London was rebuilt better than before, in three and a half years. But for purifying fires Constantinople would still have only narrow, filthy streets. Glasgow is practically modern, having been several times renovated by fire. Mr. Bancroft sketches the beginning of San Francisco, "which a merciful Providence has five times burned, the original shacks and their successors, the last time thoroughly, giving the inhabitants the opportunity to build something better." The author presents his views at length as to what the new-risen San Francisco should be, now that the ground has been cleared from obstructions.

**The Lower Niger and its Tribes.** **By Major Arthur Glyn Leonard.**

xiii and 559 pp., Index and Map. MacMillan & Co., London, 1906. (Price, 12s. 6d.)

This book is the outcome of ten years of study of languages and peoples, chiefly in the British colony of Southern Nigeria. The Cambridge ethnologist, Prof. A. C. Haddon, who supplies the preface, says that Major Leonard for a decade patiently studied native life and thought and never lost a chance of getting into touch with the natives, even though he sometimes risked his life, for some of the tribes were not yet under British influence. The book deals chiefly with the natural religions and the philosophy of the various tribes. It is soundly based upon anthropogeography and is infused with scientific spirit and also with warm sympathy for the Negro races. It was by getting into close touch with them that the author acquired the knack of seeing things from their point of view; and the more deeply he studied them, the more certain he felt that the white man had not understood the negro. The volume he has written is his interpretation of negro thought and expression.

He fully recognizes the influence of geographical environment upon human development, and gives a good description of Southern Nigeria, with its network of waterways and the painful monotony of its mangrove swamps, because he believes it will help the reader to understand more clearly the ordinary characteristics as well as the idiosyncrasies of peoples who live amid such surroundings.

The author also emphasizes the close relation that exists between the social condition of the people and their religion. At the head of the family stands the

Father or Fertilizer, who has power over life and death; next comes the Mother, who is honoured as the nourisher and producer of the Eldest Son; the Eldest Son ranks next; and then the Elders of the various branches of the household. The gods of a community are evolved along with its own development and expansion. In this notice we may paraphrase the excellent summary given by Professor Haddon of the religious notions of these peoples as shown by Major Leonard.

The importance of the father, mother, and son in the human family led naturally to the adoration of analogous family gods; thus among the Ibani, Adum was the father of all the gods and he espoused Okoba, the principal goddess and mother of Eberebo, the son-god, a very intelligent, subtle and brave deity, to whom children are dedicated and thereby partake of his good qualities.

Evidence is accumulating to prove the spirituality of many savage and barbaric peoples. Even those most backward in material culture are imbued with ethical and religious ideas, which do not materially differ from those inculcated by teachers of the religions of civilized peoples.

The religion of the Niger delta natives is based on the adoration of ancestral spirits materially represented by emblems. These objects are regarded as vehicles of spiritual influence because of their direct association with some powerful spirit. The emblem becomes nothing more nor less than a sacred receptacle. It can itself do no harm or confer any blessing, but it is the spirit, which is always ancestral, that does evil or good to mortals.

Worship consists mainly of homage and adoration. Prayers must be short and to the point. Here is a sample:

Preserve our lives, O Spirit Father who hast gone before, and make thy house fruitful, so that we, thy children, shall increase, multiply, and so grow rich and powerful.

Religion is a personal or family matter, not a public affair; and while priests act as go-betweens when the petitioners are supposed not to be on good terms with the spirits, the powerful families dispense with priests, as the ancestral spirits possess a power that can make itself felt.

The natives are seen at their worst in witchcraft, where we are confronted with only the evil aspect of nature. This remarkable book is one that cannot be ignored by students of psychology and anthropology.

**Reisen in Celebes ausgeführt in den Jahren 1893, 1896 und 1902-1903. Von Paul und Fritz Sarasin.** Mit 240 Abbildungen im Text, 12 Tafeln in Heliogravüre und Farbendruck, 11 Karten. Vol. 1, pages xviii and 381, Vol. 2, x and 390. Wiesbaden, C. W. Kriedel's Verlag, 1905.

A well-written record and highly interesting in itself, this report of exploration into territory altogether unknown looks two ways toward former work by the authors, and each aspect presents a worthy value. So far as relates to the preliminary reports of their researches, hurried home from the field and with no chance for the authors to revise the matter, these volumes afford an opportunity to correct slips and misstatements, and at the same time to discuss criticisms passed upon those earlier reports. So far as relates to the more formal presentation of the results of these two missions into the unknown (from a long list we need specify their "Materialien zur Naturgeschichte der Insel Celebes," which fills four volumes) these two volumes supply the valuable record of the terrain in which and the circumstances under which this discovery or that yielded to their keen search. While these volumes are altogether based upon the day books of

the travellers and no material fact is omitted, the narrative reads smoothly. It will in every way meet the requirements of such as need a full statement of the orientation of any discovery, and at the same time it will prove an entertaining tale of travels always interesting to read about; at times not without danger to the travellers.

Celebes has been variously compared to the clustered roots of the dahlia and to the capital K of illuminated Gothic text. The latter is the more precise, and we shall employ it for a moment in a graphic presentation of the directions of the explorations which the brothers Sarasin made upon the island. The Gothic K differs from the Roman in the possession of an upper arm extending from the top of the upright shaft clear over and beyond the width of the letter. In this upper arm the Sarasins broke new ground in a long trip in the lengthwise direction from Menado to Gorontalo and one athwart it from Buol to Marissa. At the centre of the island they made three adventures into new grounds; from Palu on the west coast to Paloppo on the southern bay, from the southern to the northern bay, and from the southern to the eastern bay. Other journeys ran lines across the two southern tips of the island. A few lines drawn in these general directions across a K will show how systematically the brothers went about their examination of the great island.

The general reader in his comfortable home will perhaps find it difficult to comprehend how a well-equipped party with no enemies to contest their way could advance in three days no more than three minutes of latitude; yet to such as have pioneered in the tropics the tale of swamps, of soggy forests, of mosquitoes and of leeches will awaken a grim sort of sympathy. It is well to recall that a line of reconnaissance in the shadows of tropical forests may represent on the map a mere ribbon of added knowledge, sometimes less than a mile wide. In such work it is only at rare intervals where the summit of some mountain is bare, at other times only by arduous clambering to the dangerous tip of some monster tree that one can hope in any degree to sketch in a general outline of topography even to ten miles on either side the line of march. This is a condition which should be borne in mind in reading this work of the Sarasins, and then one can but admire them for the magnitude of the results, topographic and other, which they have accomplished. Particular interest attaches to their tectonic and zoöphysical studies of the growth of Celebes in the Miocene and Pliocene epochs. With great show of reason they argue out the existence, before mid Celebes appeared to link the earlier elements, of a set of land bridges where now are gaps of sea. Thus, north Celebes through Sangi reached to Mindanao in the Philippines, south Celebes was bound with east Java and the present Sunda Islands and particularly with Flores, east Celebes through the Moluccas reached to New Guinea and Australia. These speculations they base on their geologic studies and upon their systematic identification of animal migrations. They are in a position to extend them still further, for they have identified in the mountain population which they discovered a certain physical conformation, which they assign to the Vedda stock. From such measurements as they were able to make and from the photographs which they took this assignment seems at least plausible; at any rate it should attract the further attention of ethnologists. In their tectonic studies they have developed another suggestion that will prove particularly attractive to students of the causes which have operated in general to produce the physical features of the earth. From the effects of erosion as shown upon rock structures and from the lay and extent of alluvial deposits they are led to



argue the existence of an age of far greater rain than at present. The geological horizon is easily identifiable as Pleistocene, and from a combination of all these elements they are led to assign this epoch of great precipitation to the great Ice Age of the northern hemisphere. This suggestion may well be extended to account for the deep alluvium of the southern face of New Guinea, which has proved such a puzzle in the exploration of the Fly River.

Students of early anthropology will welcome their careful notes upon the pile houses and the cave dwellers, the Toala of Lamongtong. The lacustrine pile dwellings of mid-Europe have received careful study, and many theories have been advanced to account for this peculiar style of habitation. But it has remained for the Sarasins to enter pile dwellings of the present day, to see how the domestic concerns of such domiciles are conducted, to familiarize themselves with life in such habitations. Their report cannot fail of being instructive, and will certainly exercise a broad influence upon a renewed study of the Swiss and other lacustrine dwellings.

In their discovery of the Toala, the bush people of the southwestern peninsula and no more than thirty miles from Makassar, they were fortunate enough to come upon primitive man just emerging from the Stone Age, for his flints and chipped stone implements were no deeper below the surface than are the arrow heads which are even yet turned up within the city limits of New York. At their discovery by the Sarasins the Toala were just emerging from cave-dwelling and a few had learned to build houses after the type of their Bugi neighbours. Speculation may be rife over the scanty fragments of a man of Neanderthal, a man of Cro-Magnon, a man of Nebraska; yet to these Swiss explorers has come the overwhelming good fortune to sit in the caves of the cave man, to meet his wife and family, to handle his club, to learn his belief, and to sound his ignorance. One cannot help enthusiasm for a work which puts us upon familiar terms with the lake-dweller and the cave-man alive and in the flesh. And it is told so simply, so utterly is it devoid of effort to impress a point, that it must infallibly carry conviction.

One other point we would mention, even though it is a negative argument. It is that in all the place-names which these explorers have recorded, whether on the coast or inland, there is not one which would awaken the recollection of any Polynesian. Yet Celebes lay in the path of the great Polynesian swarming. Its outlying island of Salayer, at the foot of the southwest peninsula, is clearly recalled in the esoteric name of our Samoan Tutuila as Motu o Salaia. Neither name, nor custom, nor art of handicraft of the peoples of Celebes finds any place in the life of Polynesia. Such negative evidence is welcome to those who are seeking to divorce the two stocks, unequally yoked in the old classification of the Malayo-Polynesian.

Despite evident care, the map-maker has done for the Sarasins what map-makers always will do; in several cases the spelling of names upon the maps is at variance with the text.

W. C.

**Prosa und Poesie der Suaheli. Von Prof. Dr. C. Velten.** viii and 443 pp. Published by the Author, Berlin, 1907. (Price, M. 7.50.)

Prof. Velten occupies the Chair of Suaheli in the Seminar für Orientalische Sprachen der Friedrich Wilhelms-Universität, Berlin. He has made this collection of Suaheli prose and poetry as a reader for students of the language. Nearly all of the selections are now printed for the first time and were collected

by the author in East Africa. The book is supplied with numerous footnotes explaining every difficult word, complex construction, etc., so as to adapt it for beginners. It includes Suaheli stories, conversations, bits of history, proverbs, riddles, poems and songs. Many of the conversations relate to business, commerce, and the daily affairs of life, and will thus help white workers to acquire the everyday vocabulary. The book will give to students a valuable insight into the intellectual life of the Suaheli.

**The Wonders of the Colorado Desert.** By George Wharton James. 2 vols. lvii and 547 pp., over 300 pen-and-ink Sketches, Maps, and Index. Little, Brown & Company, Boston, 1906. (Price, \$5.)

Seven years ago Mr. James published his "In and Around the Grand Canyon." It was the result of ten years of visiting to that wonderland. The pages showed plainly enough that the most careful and long-continued study had been given to the preparations necessary to write a good book. It was no tourist's sketch.

The present work by Mr. James shows the same grasp and mastery of the subject. He has spent a long time in studying the Colorado Desert, and his long book is full of detailed information about it. It is not a scientific treatise, but it contains much scientific matter. It is by no means wholly original, for the author quotes liberally from the best writers on the various aspects of the Desert. The whole is intended for the general reader, and Mr. James has rendered a service by placing before the public so admirable an account of that remarkable region.

The Colorado Desert, so called because the Colorado River passes through it, is in southern California and northern Mexico. The "Grand Canyon of the Colorado" lies in Utah and Arizona. The author calls attention to the fact that the use of the word Colorado has misled many persons:

Just as the "Grand Canyon of the Colorado" has been supposed (and still is) by thousands to be located in Colorado, so is the Colorado desert supposed to occupy a portion of that great state of mineral wealth.

Most readers will be surprised to learn of the manifold aspects of this Desert as they are unfolded in these pages, which first give a general review of it and then describe it in greater detail. Among the surprises mentioned by the author are the clarity of the atmosphere, the large, brilliant beauty of the stars, the coolness of the night after the blazing day, the desert rains, the contrasting colours of mountain slope, snowcap, and sands, the varieties and peculiarities of tree and other plant life, the wealth of desert flowers, the speed with which trees and plants mature, and the scores of wells yielding millions of gallons of water. All these and many other phases of the Desert, including the work of turning parts of it into areas of verdure and fertility, are described in the thirty-nine chapters; and the work concludes with a full description of the calamity that has befallen the Salton Basin, lying below the level of the sea, by the unfortunate diversion of the waters of the Colorado River into the Imperial Valley.

Mr. James does well to give a sketch of his artist, Carl Eytel, whose hundreds of pen-and-ink sketches are fully worthy to illustrate the vivid word-pictures they accompany. Eytel is an artist because he cannot help it. He loves this fascinating region and its life. He has been painting, sketching, and studying there for years. His work certainly shows a high order of talent, and we may readily believe in the truthfulness as well as the sincerity of the tribute Mr. James pays

to him: "He knows the Colorado Desert as no other man knows it, and his sketches are faithful portrayals of objects he has seen and lived with."

**Cours de Géographie. Par Henry Lemonnier et F. Schrader. Avec la collaboration de Marcel Dubois.** Cours Supérieur. Quarto, 176 pp., 266 Maps and Figures in colours and black, and 191 other Illustrations. Hachette & Co., Paris, 1906. (Price, fr. 3.50.)

This Atlas and text have been entirely reconstructed to conform with the French official requirements for the higher geographical courses in the common schools. The general facts of physical, mathematical, and human geography form an introduction to a more detailed study of the continents and their political divisions; the latter half of the book describes France in all its geographical relations. This is one of the best French school books. The subject is well arranged and logically developed. Each lesson is divided into two distinct parts. The first presents the essential ideas and the geographical names which should be committed to memory; the second part, embracing supplementary ideas or explanatory detail, is presented in the form of a reading lesson.

Commercial and industrial geography are especially emphasized, and the wealth of illustrations, particularly of coloured and black maps, is one of the finest features of the book. In the hands of a master like Schrader the many scores of maps could not fail to be instructive and well produced. In plan and in detail this is a book to be highly commended, and it will be serviceable to our teachers of geography who read French. Occasional mistakes may be easily corrected. The tsetse fly does not render cattle-raising impossible in the Congo basin, and cattle are now kept at about 70 white stations in the Congo Free State; coffee is not among the products of our south Atlantic States, and Newfoundland is not a political part of Canada.

**Kinship Organizations and Group Marriage in Australia. By Northcote W. Thomas.** xiv and 163 pp., Diagrams, Index and Maps. The Cambridge University Press, Cambridge, 1906, G. P. Putnam's Sons, New York. (Price, \$2.)

The book is to some extent a criticism of the folly of hasty theories based upon insufficient data. It adds to the large number of facts previously collected by Spencer, Gillen, Roth, Howitt, Mrs. Parker and others, analyzes the whole evidence and points out the inconsistencies that are found in some of the most pretentious records. The book is a survey of our present knowledge of Australian kinship organizations, and it may well help to stimulate further research in that field, which may throw more light on the many difficult problems of primitive sociology. The author goes outside the Australian field for many facts collected from other primitive peoples that may afford useful clues.

In the first chapter, Mr. Thomas discusses social organization among peoples of low culture, such as tribes, kinship groups, totem kins and phratries (the prohibition of marriage to a member of one's own tribe or group), drawing upon our knowledge of these organizations in all parts of the world. He deals, in the second chapter, with descent as reckoned in the paternal or maternal line, but does not attempt to answer the questions why early mankind appears, almost universally, to have reckoned descent of the kin name and inheritance in the female line and why many tribes have shifted to reckoning in the male line. No evidence justifies a theory, and he thinks the problem is probably insoluble.

He next discusses the organizations called totem kins, phratries, and matri-

monial classes in their various combinations, and illustrates by maps and tables their territorial distribution all over known Australia. Mr. Andrew Lang, himself one of the foremost students, speaks of these chapters which fill most of the book as "a work of great labour very efficiently performed." The author proves clearly that when the names of the phratries and matrimonial classes can be translated "they are names of animals which indicate some relation probably between the phratries and classes on the one hand, and the system of totemism on the other." But only a few of the class-names can be translated with certainty.

The book is critical and cautious, holding fast only to that which can be proved and protesting throughout against generalizations upon obscure data. Messrs. G. P. Putnam's Sons are the representatives, in the United States, for this and other publications of the Cambridge University Press.

**La Chine Novatrice et Guerrière. Par Capitaine d'Ollone.** ix and 319 pp. Librairie Armand Colin, Paris, 1906 (Price, 3.50 fr.)

The book is largely the outcome of a mission to China which the Ministry of Instruction confided to Captain d'Ollone. It is not his first book, and the author is already known for the painstaking care with which he collects facts. He thinks the present attitude of China towards Western civilization cannot be understood without knowledge of her past, and therefore he presents many facts relating to the military, religious, administrative, and social aspects of Old China before dealing with the realities of the present. There is nothing dry about the author's handling of the complex subject, for his style is interesting and the pertinence of his material is evident. Through history he leads up to the present day with its forces of conservation and evolution, its social and scientific unfolding, its educational reforms, new military régime and growing desire for the material conveniences of the West. He says it is too early to speculate as to the future of China. The new influences have been too recently introduced to judge of their influence in shaping future history. We should first know the Chinese and their country better, and the book is a contribution to this study. It is worthy of wide attention.

**History of the Philippine Islands from their Discovery by Magellan in 1521 to the Beginning of the XVII Century; with Descriptions of Japan, China and Adjacent Countries. By Dr. Antonio de Morga.** Completely translated into English, edited and annotated by E. H. Blair and J. A. Robertson. With Facsimiles. 2 volumes. 8vo. Cleveland, Ohio, The Arthur H. Clark Company, 1907. 331 and 209 pp.

De Morga's account, one of the most important sources for the early history of the Philippines and their contemporaneous relations to China and Mexico, first appeared in the year 1609, printed in the City of Mexico, under the title "Sucesos de las Islas Filipinas." The events described in his volume cover a full century—the period from 1493 to 1603—and the history proper of the archipelago from 1565. The editors very aptly characterize his work in the preface as follows: "Morga's work is important, as being written by a royal official and a keen observer and participator in affairs. Consequently he touches more on the practical, everyday affairs of the islands, and in his narrative shows forth the policies of the Government, its ideals, and its strength and weaknesses. This book is written in the true historic spirit, and the various threads of the history of the islands are followed systemati-

cally. As being one of the first of published books regarding the Philippines, it has especial value. Political, social, and economic phases of life, both among the natives and their conquerors, are treated. The futility of the Spanish policy in making external expeditions, and its consequent neglect of internal affairs; the great Chinese question; the growth of trade; communication with Japan; missionary movements from the islands to surrounding countries; the jealous and envious opposition of the Portuguese; the dangers of sea-voyages: all these are portrayed vividly, yet soberly."

In 1868 the Hakluyt Society of London published an English translation by the Hon. Henry E. J. Stanley. The question whether a new translation was a hard-felt necessity may be debatable; but from the standpoint of the editors, whose general aim is to publish all documents relative to the Philippines from 1493 to 1898 (de Morga forms Volumes XV and XVI of their admirable collection "The Philippine Islands"), and in view of the fact that most of the Hakluyt editions are now out of print and very difficult to procure, their plan is more than justified. The principal difference between their translation and that of their predecessor is that Stanley has attempted to imitate the old-fashioned chronicle-like style of the original, which necessarily leads to affectations and obscurities, while the present translation is rendered in a plain, present-day, fluent English. There are other desirable features which make this new edition superior. Besides the annotations of Stanley, we find here many explanatory remarks taken from Rizal's Spanish edition of de Morga (Paris, 1890), and others from the "Recopilación de leyes de Indias." Many native Philippine terms occur in the "Sucesos," which Stanley was unable to account for, and which are here made lucid through Rizal's Philippine scholarship. Compare, for example, p. 48 of the present translation with p. 18 of Stanley's, where, in the description of the native settlements on the site of the subsequent foundation of Manila, the word *arigues* is used in the sense of objects which, filled in with earth, served as fortifications. Stanley was compelled to admit that he was unable to discover the meaning of this word; the context seemed to him to require *stakes*. It may be intended, he explains, for areca palms, or be connected with the French *ariguer*, for *althier* ("a thorn tree"), or it might be from the Arabic *'ark* ("a root"). Now, we learn from Rizal that *arigues* comes from the Tagal word *haligi*, which are stout wooden posts, used to support the frames of buildings. The word is in quite common use in the Philippines among the Spanish-speaking people. It is true, however, that all difficulties in de Morga's text are not yet solved, and that much remains which requires further elucidation, especially in those passages where the Chinese and Japanese are dealt with. The editors have made but few attempts to resort to coeval Chinese and Japanese sources for the verification or interpretation of such points, although some useful preliminary work in this direction has been done by the late British Consul George Phillips.\* There is hardly an excuse for calling the Shōgun Hideyoshi of Japan an "emperor" (Vol. I, p. 67). The port Hurando (p. 118) is apparently Urado. *Miaco*, mentioned on the same page as the Shōgun's residence, is the Japanese word *miyako*, which simply means "a capital." As regards the note on p. 119 referring to the word *Nambajies*, the Japanese designation of the Spaniards, Stanley's explanation is certainly wrong, and Rizal comes very near to the truth; but *Nambanjin* does not exactly signify "dweller of the barbaric south," but, "people of the southern Man," *Man* being originally a general Chinese designation for the

\* Especially in his papers, Early Spanish Trade with Chin Cheo (China Review, Vol. XIX, pp. 243-255), and Two Medieval Fuh-Kien Trading Ports (T'oung Pao, Vol. VI, pp. 449-463; Vol. VII, pp. 223-324). Compare also Parker, Early Spanish Trade with China (China Review, Vol. XIX, pp. 324-326).

manifold aboriginal tribes scattered over the southern parts of China. In Japanese literature, even nowadays, it is a quite common name, first of all for the Portuguese, then, also, for the Spaniards and Dutch; it enters into the name of several American cultivated plants introduced into Japan; and *Namban-ji* ("Temple of the southern Barbarians") was the designation of the Jesuit church established at Kyôto from 1560 to 1588.

The "red wood" mentioned on p. 256, and in Vol. II, p. 89, is the well-known sappan wood of commerce, which, according to Chinese accounts, must also have been indigenous in the archipelago, and have formed one of the much-sought-for articles of Chinese commerce.

Some other terms, apparently derived from Chinese, as *juanga*, *canganes*, *sines*, *tacley*, are still unexplained and deserving of study.

Altogether, the editors have accomplished a meritorious task, and furthered the understanding of de Morga's interesting account to a great extent. An index, which is unfortunately lacking, would have been very useful. We note in the two volumes only one misprint, and that of no great consequence.

B. L.

**Dictionnaire d'histoire et de géographie du Japon. By E.**

**Papinot.** Illustré de 300 gravures, de plusieurs cartes, et suivi de 18 appendices. Tokyo, 1907. xviii and 992 p., with separate atlas of 11 maps.

In 1899, Mr. E. Papinot, a Catholic missionary, published in Hongkong a small, modest volume of only 297 pages, giving in alphabetical arrangement a list of the principal names occurring in the history and geography of Japan. Frequent consultation of this book, during a number of years, has always proved it a safe and trustworthy guide in the pursuit of Japanese studies. The present splendid volume, so largely increased, calls forth the greatest expectations; and the author deserves the highest praise and the heartiest congratulations for this useful task, which he has accomplished in a most creditable manner. It is a handbook that is much needed just at the present time, and one that will be indispensable not only to Japanese scholars, but also to geographers and historians in general, to diplomats, travellers, newspaper editors, collectors, and all people to whom the subject of Japan is dear. The book is prefaced by a general introduction to the history of Japan; every catchword is accompanied by its Chinese characters; the information given is precise, succinct, and matter-of-fact. The value of the work is greatly enhanced by numerous text illustrations taken from Japanese wood-engravings representing landscapes, famous personages, historical scenes, and religious ceremonies. The art-historian, as well, will avail himself of this dictionary to great advantage, as he will find in it the biographies of a large number of painters and other artists. In a supplement are given the names of the principal foreigners who had relations with Japan before the time of the Restoration (1542-1868). There is also a subject-index, which facilitates the hunting-up and studying of certain subjects—like religion, art, law, medicine, etc.—under the various headings among which the material is scattered. The atlas of 11 maps, including plans of Tōkyō and Kyôto, and representing the provinces in colours, is bound separately. It is a most beautiful production, and, owing to its octavo size, the most convenient and useful atlas of Japan which we know of. Print and paper are equally excellent; the book, issued by a Japanese publishing-house in Tōkyō, affords enjoyment from both an artistic and a scientific standpoint at the same time; and the price, 20 francs, is so remarkably cheap that the wide distribution which we earnestly wish for it cannot fail to result.

B. L.